From the best-selling author of *Color Correction Handbook*

COLOR CORRECTION LOOK BOOK

Creative Grading Techniques for Film and Video

Alexis Van Hurkman

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CREATIVE GRADING TECHNIQUES FOR FILM AND VIDEO

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Alexis Van Hurkman

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DEDICATION

To Rod Gross, director and producer, who hired a green young editor and made him learn After Effects 3.0; I blame you for helping start me on a long and successful career.

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INTRODUCTION

Because you do not have to imitate, like painters, sculptors, novelists, the appearance of persons and objects (machines do that for you), your creation or invention confines itself to the ties you knot between the various bits of reality caught. There is also the choice of the bits. Your flair decides.

—Henri Cartier-Bresson (1908–2004)

If you're reading this in the bookstore or online to see whether this book is for you, it's important that you understand what this book is *not*. This book will not teach you the basics of color correction, nor will it teach you how to balance shots in a program to play as a seamless whole, how to isolate features of an image for specific adjustment, or how to achieve desirable skin tone. These topics are all covered in the *Color Correction Handbook: Professional Techniques for Video and Cinema*, which you're advised to read first if you're new to color grading.

This book *will*, on the other hand, show you how to have lots of visual fun stylizing the images your clients give you.

In the ideal world of some cinematographers, the photography of an image would be entirely controlled by the director of photography (DP), primarily via images captured in-camera, with whatever balance of light and shadow, interplay of glow and volume in the lighting, and intended color interaction conceived on the set, recorded faithfully, and enhanced carefully by the colorist under strict supervision for the eventual benefit of the audience. Gordon Willis, A.S.C., articulates this point of view in an interview with Casey Burchby in the May 23, 2013 *LA Weekly*:

> *In today's moviemaking, you have lost the integrity of the original image. You've lost the integrity of the person who's thought things out and wants a certain thing to be achieved on the screen. Because if you don't have a contract that says no one can change anything, everyone who loves a dial—and they all seem to love dials—gets ahold of it and things turn into magenta, they turn into yellow, they turn into some of the most insane applications of "creative thinking." There are people who should know better, who have been making movies for a while, who get into this damn room with those dials and they start doing things they never would have thought of doing. They go, "Well, we're here. Let's blow up seven bridges."*

Fair enough.

However, as anyone who's been in production knows, time and budgets are the enemy of grand plans for in-camera effects, and it's often the case that the best intentions are defeated by the need to get through however many pages in a day

are necessary to get back on track. This can make the effects contributions of the grading department essential to achieving a desired look.

Cinematographers who've gone through enough digital grades usually come to understand the range of options that a skilled colorist makes possible. The prudent cinematographer learns to incorporate the knowledge of what sorts of adjustments and looks are easy in post, and—more importantly—which ones are not, and incorporates that knowledge into their shooting strategy.

Thus, the colorist's job is no longer to simply balance, fix, and optimize. Stylizations and effects once created by the film lab are no longer photochemically available. In truth, you the colorist have *become* the lab, and these sorts of image stylizations are now part of your job description.

Additionally, in a world of increasingly flawless digital reproduction of radiometric light, the quality and consistency of digital image capture threaten to become boring, and it's not uncommon for directors to long for the idiosyncrasies and imperfections of older recording methods. Or, they long for you to show them something completely different, to differentiate the look of a given project from the last 50 projects that were shot with that camera.

This book aims to present a useful collection of creative grading techniques designed to give you an arsenal of stylizations you can use when the client asks for something special, unexpected, and unique.

The techniques I present in this alphabetically organized book are the types of corrections you'll make for music videos, advertising spots, and even re-creations and dream sequences within more conventionally graded programs, all of which will benefit from your ability to create something a little more wild. This book presents a variety of strategies that you can experiment with.

And that's the key: I've worked to present techniques that are *strategies* more than they are "looks." Most of the creative techniques I've chosen to cover are highly customizable and can be tailored to suit your particular purposes. More likely, you'll find yourself mixing and matching them in order to create your own unique effects. No two movies, spots, or series will have the same needs, although many of the stylizations you create can be categorized as variations on familiar, recognizable techniques.

Have fun!

SPECIAL THANKS

I want to first extend a very deep, heartfelt thanks to the filmmakers who have graciously allowed me to abuse their work in public within this volume. All of these projects are programs that I've personally graded, and they represent a fair spectrum of what you'll see out in the real world. All were terrific clients to work with, and I sincerely appreciate their contributions to this book:

- Josh and Jason Diamond (directors) for excerpts from their *Jackson Harris* music video and their narrative short, *Nana*.
- Matt Pellowski (director) for excerpts from *Dead Rising*.
- Sam Feder (director) for excerpts from his documentary feature *Kate Bornstein: A Queer and Pleasant Danger*.
- An excerpt from my own narrative short, *The Place Where You Live* (me, Director) is featured as well, and I'd be neglectful if I didn't thank Marc Hamaker and Steve Vasko at Autodesk, who sponsored the project.
- Yan Vizinberg (director), Abigail Honor (producer), and Chris Cooper (producer) for excerpts from Persona Films' feature, *Cargo*.
- Jake Cashill (director), for excerpts from his feature-length thriller, *Oral Fixation*.
- Bill Kirstein (director) and David Kongstvedt (writer) for excerpts from their feature, *Osiris Ford*.
- Lauren Wolkstein (director), for excerpts from her award-winning short, *Cigarette Candy*.
- Michael Hill (director), for excerpts from his 16mm short, *La Juerga*.
- Kelvin Rush (director), for excerpts from his Super 16mm short, *Urn*.
- Rob Tsao (director) for excerpts from his comedic short, *Mum's the Word*.

I must extend additional thanks for the use of clips from programs I didn't work on but which provide unique qualities that are valuable to the examples I needed to show:

- The nice folks at *Crumplepop* including Gabe Cheifetz, Jed Smentek, and Sara Abdelaal (who shot the material), for a wealth of stock videography they provided me with, as well as other materials from Crumplepop's scanned film grain library and film LUT analyses.
- Warren Eagles (colorist) for clips of film and video distress from his Scratch FX library (available from *fxphd*).
- John Dames (director at Crime of the Century), for clips from *Branded Content for Maserati Quattroporte*.

I also want to give thanks to Kaylynn Raschke, a talented photographer (and my lovely wife) who is responsible for the images gracing the covers of this book and the two editions of its companion volume (*Color Correction Handbook*), and for many additional images that appear within numerous examples. She's also gamely put up with my triple-shifts as I've brought this and many other works to light this year.

Additionally, I could not have written this book without the help of many, many individuals at companies that include true titans of the grading industry (presented in no particular order):

- Grant Petty, CEO of Blackmagic Design; Peter Chamberlain, Product Manager for DaVinci Resolve, and Rohit Gupta, Director of DaVinci Software Engineering, all of with whom I've been fortunate enough to work with over the years, for sharing as much as they have in both the previous edition and the current one.
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- Sherif Sadek, "Assimilator" at, you guessed it, Assimilate, for providing demo licenses of Scratch, screenshots, and answers to numerous questions as I integrated Scratch examples into this book.
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- Mike Most, colorist, effects artist, technologist, and all-around digital wizard, for the most detailed conversation about the ins and outs of log grading that I've had, which added immeasurably to this book.
- Warren Eagles, freelance colorist without borders, for numerous discussions over the months, and for sharing his knowledge so freely with all of us in the color grading community.
- Giles Livesey, freelance colorist and international man of mystery, for sharing some of his key tricks of the trade with me, and for insights into the history of commercial looks in the UK post industry.
- Michael Sandness, senior colorist at Splice Here, and my good friend and colleague in the Twin Cities, who was a great sounding board during discussions too numerous to mention, and who provided much-needed human conversation (albeit about color grading) during my many weeks in authorial seclusion. I'll take a weekend off yet, Michael…

A big thank-you to my technical reviewer for this volume, Dave Hussey, senior colorist at Company 3, a veteran artist and true giant of the industry who agreed to review all other material despite his incredibly busy schedule. His encouragement, kind words about the content, and additional insights have been invaluable.

My thanks remain to the original reviewer of this material in the previous edition of *Color Correction Handbook*, Joe Owens, colorist (Presto!Digital), defender of the video engineering faith, and generous contributor to numerous online forums on the topic of grading, for reviewing my original chapters and providing terrific feedback.

I also want to personally thank Karyn Johnson (Senior Editor, Peachpit Press), who initially championed the first edition of the original *Color Correction Handbook*, went on to encourage a second edition when the time was right, and then went the extra mile in convincing Peachpit to publish a whole additional volume when I ended up writing 200 pages too much. Karyn, every colorist who buys both of these books owes you a debt.

Last, but very certainly not least, I want to thank Stephen Nathans-Kelly (Editor), who in *both* editions has gamely reviewed each increasingly enormous chapter, now in both books, for treating my prose and technical content with delicacy; this stuff ain't easy to edit. With Karyn, Stephen, and Peachpit Press's support, I've continued to create exactly the books that I wanted to, with no compromises. I hope you enjoy it.

A NOTE ABOUT IMAGE FIDELITY

In all instances, I took great care to present realistic grades within this book, and yet it's often the case that certain adjustments required exaggeration to be noticeable in print. Unfortunately, knowing that a digital edition was going to be made available, I've been in the unfortunate position of having to serve two masters with a single set of images.

I feel that the results serve the purpose of illustrating the topics admirably, although I cannot guarantee what certain images will look like on every possible digital device to come. To those of you who are reading this on your tablets, phones, smartwatches, augmented reality devices, and VR goggles, I hope you like what you see.

A NOTE ABOUT THE DOWNLOADABLE CONTENT

Throughout this book, you'll see examples of scenes in commercially produced shows that are used to demonstrate various concepts and techniques. The downloadable content includes a wide variety of corresponding QuickTime clips that you can use as a playground for experimenting with the techniques discussed. These clips are the raw, uncorrected source material for each example, and can be imported into any grading application that's compatible with Apple ProRes media. For more information about the media on the disc, please see the Read Me file that accompanies the download.

To access the download, register your book at www.peachpit.com/cclookbook. If you don't already have a Peachpit account, you will be prompted to create one. Once you are registered, go to Account, select the Registered Products tab, and click the "Access Bonus Content" link. Copy the download to any location you prefer on your system.

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CHAPTER 1

WORKING WITH LOOKS

Before diving into the wealth of techniques presented later in this book, it's useful to consider what kind of thought goes into the heavy image manipulation of look development.

It's a slippery slope from simply pushing the highlights of an image toward a warmer overall tone to creating a high-contrast skip-bleach simulation with an isolated cross-processing look in the highlights and a slight undertone in the shadows. Ultimately, the difference between a stylized grade and a *look* is imprecise and fungible. Perhaps the main difference is how much work you put into it. Perhaps the difference is how much of a change you've made from the original.

However you look at it, looks are visible stylizations of an image with the intent to create a clear mood or reference. Westerns can easily benefit from warmth, grit, and contrast. Vampire movies look extra-vampy through the addition of pools of darkness, cool light, targeted saturation, and unusual color tones mixed into the lighting. However, those familiar looks, while visually clichéd now, were once deliberately created to evoke a sense of time or place—in short, to find different, narratively specific ways of letting the audience know "we're not in Kansas anymore."

In general, a look, like any sort of grade, works best when you can clearly articulate your rationale for matching each aspect of that look to the image and narrative at hand.

NOTE

Two short sections appearing at the end of this chapter are adapted from *Color Correction Handbook: Professional Techniques for Video and Cinema, 2nd Edition* (Peachpit Press 2014), and are included in this book for your convenience.

DEVELOPING A PROJECT-SPECIFIC COLOR VOCABULARY

What a horrible thing yellow is.
—Edgar Degas (1834–1917)

All looks are based upon some dominant use of color (even if that's achieved by diminishing a specific range of color), and I think it's useful to examine different approaches to creating color meaning for a particular project, especially as meanings

can change depending on the narrative requirements of the project you're working on. For example, **Figure 1.1** shows the "before" and "after" of a grade I did on a scene for director Matt Pellowski's high school zombie movie *Dead Rising*.

Figure 1.1 Before and after of my grade for a climactic scene in *Dead Rising* (still in production)

Based on the narrative content of the piece (a horror movie with zombies) and my treatment of the colors (faintly blue-green undertones, warm held-out skin tones, inky shadows), one might work out the color impressions shown in **Figure 1.2**.

This makes sense and falls in line with many visual associations that viewers will be well aware of and comfortable with from years of movie watching. In fact, these associations go back to the beginnings of cinema. When explaining the uses of tinted black-and-white stocks for cinema (covered in more detail in Chapter 23, "Vintage Film"), Kodak cited studies such one found within Matthew Luckiesh's *The Language of Color* (Dodd, Mead and Company, 1920), which confirms, even in the early days of cinema, the existence of an emotional warm/cool axis.

> *The data available are in quite complete agreement that the so-called warm colors, red, orange and yellow, are stimulating or exciting in varying degree from a maximum for red (scarlet) to a less degree for the yellow. Green is fairly neutral in this respect, blue produces a grave mood-reaction, and violet a similar one that might be described as solemn. Considering the colors in the spectrum it is seen that there is a definite variation from red to violet and it is generally agreed that both extremes of the spectrum and combinations of these—the purples—produce fairly neutral or tranquil mood-affectations. This is quite in agreement with general experience.*

However, these associations, while real, are not sacrosanct, and there are other interpretations of color that may be just as valid in different situations. In particular, I've found that the emotional palette of a film can be highly contextual to the narrative content therein. For example, if we were grading a movie taking place in the desert, mapping of color to mood might make more sense, as shown in the color schematic in **Figure 1.3**.

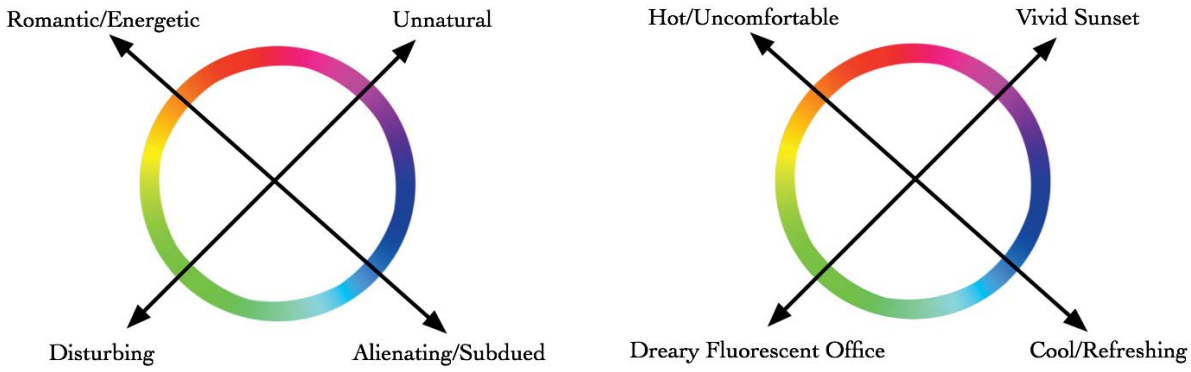

Figure 1.2 (Left) Color wheel plot of hues and emotional rationalizations

Figure 1.3 (Right) Same colors, different rationalizations

The point I'm trying to make is that the narrative content of a project should influence the interpretations of color that you decide to rationalize. While there are widely accepted correlations between color and mood, these correlations can be represented with lots of wiggle room, and they depend heavily on situation and personal style to give one interpretation weight over another.

What's less ideal is to impose a look onto your project just because you saw it somewhere else (this book included) and thought to yourself, "That's what a movie ought to look like." The looks you design should be directly tied to the needs of your client's story and rationalized by the narrative structure you find yourself working within. And by narrative I don't just mean fictional stories. Every music video, promo piece, 30-second spot, and documentary is rendering a narrative in one form or another. If your client wants to render the narrative in a highly stylized way, you need to find a way to accomplish that.

You should always, always ask yourself whether there's a way of using the color palette that the art and costume departments designed and the cinematographer photographed that is more specific to the scene at hand and perhaps more creative than whatever someone else did.

SPLITTING THE DIFFERENCE

No matter who the client is or what the project is, sooner or later you're going to be asked whether you can "split the difference" between your interpretation of what the client wanted and what they discovered they really wanted once they saw what you were up to. This will make you go quietly, politely crazy, and it's one of the reasons you need to cultivate a great reservoir of equanimity to do this job.

At the end of the day your client's needs are more important than your mad skills, so you'll make the change, render the project, and ideally leave work on time to go

knock back a beer or two during happy hour, recalling fondly how cool that program would have looked had they only let you off your chain. This is one reason why colorists still do music videos, despite the woefully poor budgets the majority of them have: for the opportunity to create wall-to-wall insanity in the grading.

I often flip through fashion catalogs for color treatment ideas; my wife, Kaylynn Raschke, is a photo stylist who works on these kinds of things, so she gets most of the relevant fashion magazines and catalogs, and we often compare notes on the changing styles of photography from season to season, which is a nice bit of casual research.

Then, of course, I dig into my grading project of the week, ready to experiment with some of the new treatments I've seen, and inevitably the clients don't want any of that. They say they want a nice, clean grade that's a little warm, with good contrast but no crushing, and *for God's sake don't clip the skin tones*.

All of which is fine. Your average documentary is not going to look like a music video. Still, it makes me treasure all the more those projects that are looking for bolder color treatments. So, when I get a project with a flashback or dream sequence or for which the client is wanting signature looks for specific scenes or acts and they let me go a little crazy, the pang I feel when I hear "Could we split the difference?" is just a little sharper.

Here's an example of what I'm talking about, based not on a specific project but an amalgam of different experiences.

One of the first things I usually do is a simple, nondestructive and neutral grade of the image just to see what I have to work with. In this instance, I apply a simple set of Lift/Gamma/Gain adjustments and a modest YRGB curves adjustment to compress the toe of the shadows, yielding the image shown on the left of **Figure 1.4**.

At this point, the client tells me, "Yeah, I saw these great color treatments in the Free People catalog, and I really like that faded color with blue shadows and a faded light-leak on the side. Could you do that? Let's go crazy!"

And I say, "Heck, yeah." And I proceed to start abusing the image, first using the YRGB curves to create nonlinear, per-channel color adjustments to the highlights and shadows to create a warm/turquoise disparity, with high contrast specifically targeted to the tonality of the image to maintain a smooth falloff and a blue lift via the blue channel's YSFX slider (a DaVinci Resolve adjustment).

Then I show the client the result. Predictably, after a period of silence, the client says, "I'm not sure about the flaring. Could we split the difference?" The remainder of this narrative could go on and on, but to make a long story short, oftentimes situations like this have the evolution shown in Figure 1.4.

Figure 1.4 Slowly chipping away at the style of the piece. My first take (far left), a second version toning down the extreme style (middle), and the final version the client was comfortable with (right).

The final solution ends up being slightly warmer midtones and very neutral shadows, easily accomplished by deleting all my other adjustments and making two simple color balance tweaks to Lift and Gamma. The reference image turned out to be a MacGuffin that served only to show the general direction of the correction. It was not, in fact, what the client wanted.

This happens all the time, and consequently I find I'm a bit skeptical when someone asks me to do something incredibly brash and bold. I don't want to spend too much of the client's time working up an elaborate grade when all they really want is something pretty simple. On the other hand, you want to take the client seriously, and if they really are looking for something bold, you don't want to seem too meek, lest they mistake you for a creative simpleton.

At the end of the day, I find it all boils down to getting to know your client as well as you can, and your first two hours are critical. Pay particular attention to your client's verbal and nonverbal cues as you create the initial, exploratory grades for a new piece. Chances are, you'll know within three adjustments if you're on the right track, and you can swiftly change course if you're not.

And besides, if you create some super-cool look that the client doesn't ultimately want, you can save it for some other job. That's what the still store is for.

MANAGING STYLE SEPARATELY

Many applications provide a way of applying multiple sets of adjustments to an image, whether as multiple layers, nodes, adjustment layers on a timeline, or additional scene or track-wide grades that can be applied on top of each clip's individual grades. Whatever the method, some colorists working on highly styled shows like to apply two sets of grades: an underlying set of grades for balancing each shot and an overall grade to set a look for the entire scene.

This is a professional workflow that offers a great deal of flexibility in situations where the client may decide to change their minds five times as you're working your way up to delivering the show. Balancing clips neutrally in a first pass and then applying a stylistic adjustment on top of that using whatever grouping or adjustment layer mechanism your software provides can make changing up your style grade a snap. The client doesn't like the hard blue undertones they asked for on Monday?

Fine, adjust a single grade to change the entire scene to a pale blue wash with protected dark shadows instead, with no need to readjust every single shot. **Figure 1.5** shows how you can set this up using an adjustment layer in Adobe SpeedGrade.

Figure 1.5 In Adobe SpeedGrade, a superimposed adjustment layer (named "Romantic Fade grade") over the last four clips in the timeline applies a stylistic look to the cutaway scene.

You may find, however, that a two-pass approach can be more time-consuming than simply shot matching and styling within a single grade and can be unrealistic for projects with parsimonious clients. This is especially true if the client's definition of a "look" is a touch more warmth in the diffuse highlights or a bit more blue in the midtones—simply a different way of balancing the scene, easily accomplished by continuing your adjustment in the primary grade.

In fact, the difference between a neutral grade and a "style" grade for something like a documentary project, where the client doesn't want anything too exotic, can be subtle to the point of invisibility. In this case, doing everything in your main grade is a simple convenience.

The bottom line is *time*. If you're working on a well-budgeted program and your client's initial availability is limited, you can take advantage of downtime by preemptively balancing each scene in advance. Once the client rolls in, you can work with them to apply stylization to the whole scene and modify the look within two or three versions as necessary to get the client's buy-in. When following this approach, bear in mind that shots that seemed perfectly balanced with a neutral grade might go out of balance once you start pushing the contrast or the color balance of the overall scene in a different direction, so even when you've pregraded, you may still need to continue tweaking the odd shot to maintain good balance.

For example, DaVinci Resolve offers a *track grade* feature that lets you apply a single grade to every clip in the timeline at once. In the previous scenario, if you're working on a commercial spot, you can work unsupervised to balance all of the shots via their individual clip grades. Then, when the client arrives, you can use the Track Grade to apply an additional correction for style on top of everything else, focusing all of your energy on revisions to a single set of adjustments (**Figure 1.6**). Other applications enable similar functionality using groups, compound or nested clips, or adjustment layers.

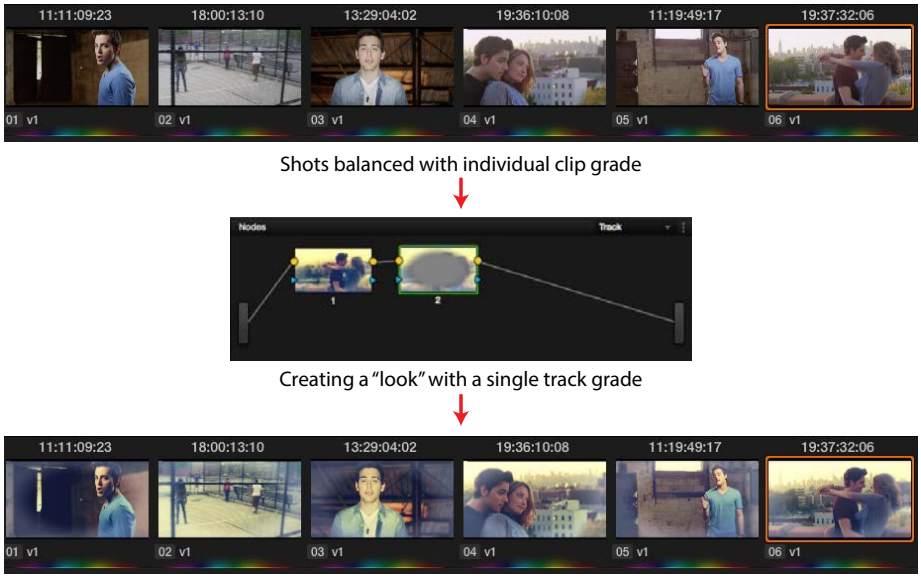

Figure 1.6 Balancing clips in a music video with individual grades but then using a track grade in DaVinci Resolve to apply a set of style adjustments to the entire program at once

Another thing to consider is that grading workflows are not always either/or. If the main look the client wants is a subtly warm, slightly higher contrast treatment that you've decided to simply build into the primary grade, then doing an all-in-one grade makes a lot of sense. However, when they change their minds and say they want to cool down the overall look and lift the bottom blacks up, it's perfectly acceptable to add this adjustment on top of what you did previously so long as you didn't clip or over-compress valuable image detail in the initial grade. If you did, then you'll need to go back and change your primary adjustments to accommodate the new look or apply the modification as a layer or node *before* your primary adjustment.

SAVING A LIBRARY OF LOOKS

For every project you work on, you'll doubtless come up with one or two interesting solutions to common problems or "boss" looks that weren't, ultimately, appropriate for the task at hand. It's good to notice these exceptional moments of overachievement and to have the wherewithal to save such useful grades for future projects.

Furthermore, as you work your way through the techniques in this book, you'll undoubtedly come up with your own variations while practicing how to create certain looks. Save them too. And don't stop there. If you're working in a facility and

you have a free hour in between appointments, try building some interesting looks of your own. Experiment with harebrained new ideas, and try creating your own version of looks you've seen in fashion magazines or music videos. And when you notice you've built a cool-looking grade in a new way, see whether you can't create two or three variations on that look. But above all, save all of these grades for future use, using whatever mechanism your grading applications provides for organized recall.

TIP

When the client asks for something that I know will be really elaborate and time-consuming to create, I find it's often best to politely mention to the client that this grade will take a few minutes to put together and to invite them to sample the terrific new coffee bar you've just installed down the hall, check their e-mail, or feel free to rock that next level of Modern Combat on their iPad. Communication, as always, is key.

One of the great advantages of the preset look is that you can apply it instantly, and in that one moment, you can get an instant "wow" or "ugh" from the client that will tell you all you need to know about the direction you want to go. I've noticed that when building involved looks the old-fashioned way, one operation at a time, the supervising clients can sometimes get nervous. In many ways, there's nothing worse-looking than a half-finished grade, and many is the client who'll stop you just before you get to the good part, saying, "Oh, I don't know, maybe this is a bit much…."

On the other hand, if you have a premade look that consists of the same five operations and you apply it so that it appears all at once, that same client may very well go "Wow, that's great!" Sometimes, instant gratification sells a big look better than watching its slow construction. As someone who likes to create bespoke looks for each new project, this was a difficult thing for me to reconcile myself with at first, yet there's no denying the phenomenon. Clients who will shoot you down halfway through every creative grade you try to slowly build will embrace saved presets that you can spring on them instantly.

So, if you build up your own collection of secret-sauce looks, then you've got some recourse when your client says "Show me something wild." More to the point, if you build a set of presets that span the breadth of looks that you typically find your clientele asking for or if you put together some special looks the morning prior a session in which you think you might need them, then you can put yourself into a situation where you can give the client a rapid-fire taste of a variety of styles, shopping around, if you will, for what the clients themselves may be unable to fully articulate. Once you find something even remotely close to what they like, then you know what they're after, and you can customize and rebuild the look to the needs of the scene at hand. If nothing else, this can be a good way of starting a conversation about where to go from here.

Here's the catch, though: Looks saved for the particular range of color and contrast in one shot will *not* look the same for every shot you apply them to, especially if they use HSL Qualification to isolate specific tonal ranges and hues as part of their operation. For this reason, it's good to remember which saved presets look best with what distributions of image tonality.

TIP

Adobe SpeedGrade lets you rename layers of a grade to help you identify what they do. DaVinci Resolve lets you add labels to nodes. Both are saved when you save a grade for future use.

Of course, if you have a set of styles that are particularly popular, you can save variations based on adjustments you've made to fit a particular look to a variety of lighter and darker shots. Alternately, you can label which adjustments have which effect, so when you apply that preset five months later, it's easy to spot where to make alterations without spending five minutes reverse-engineering your own work.

PROTECTING SKIN TONES FROM EXCESSIVE ADJUSTMENTS

While this book presents many ways of making images look incredibly cool, it can often come at the price of making skin tones look bizarre. Because audiences and clients can be touchy about how skin tone is treated in an image, it's useful to know how to adjust skin tone separately from the rest of the stylization you're applying to an image before you start smearing yellow highlights and blue shadows all over an image.

SIMPLE WAYS OF PROTECTING SKIN TONE

This technique is an important one for situations where you're creating extreme grades to the environment in which actors appear. Unless you do this carefully, you'll run into trouble when the people in the frame get sucked into your stylized correction, losing the very skin tone that we typically try so hard to get right.

For instances like these, a common solution is to create the stylized grade by using HSL Qualification to isolate the actor's skin tone. Then you split the operation into two secondary corrections, each using an inverted version of the same mask to grade the subject and background separately, making sure to keep the color of the isolated subject compatible with the new illuminant.

The clip in **Figure 1.7** is a night shot that already has a primary correction: expanding the contrast, dropping the shadows (but retaining detail at 0 percent/IRE), and boosting the midtones subtly to enhance the visibility of the actress. The shot is naturally warm, with good skin tone. However, for various reasons, the client would like the environment to have a cool quality instead.

Figure 1.7 The initial image with its base primary correction

With such a dark shot, the best effect will be accomplished by pushing the Gamma color balance control toward a blue/cyan split, since using the Shadows control will result in a huge blue shift in the blacks, which is ordinarily best avoided. Retention of the scene's pure blacks will provide a greater sense of colorfulness than a uniform blue shift throughout the image.

However, using the Gamma control will make the woman blue as well, given the extent of the probable correction to be made (**Figure 1.8**), so we need to do something to protect her from turning into an alien.

Figure 1.8 The blueberry-like complexion that would occur if we applied the client's desired stylistic correction indiscriminately to both the background and the actor

NOTE

The resulting matte may not look very good from a compositing perspective, but keep in mind that you're keying to protect the midtones of the skin, not to create a blue- or green-screen effect. There may be a bit of noise at the edges, but as long as any noise or irregularities aren't noticeable during playback, you can probably get away with a fairly ragged matte.

Adding a second correction, we use HSL Qualification to pull a key off the woman's skin tone, taking care to adjust the Hue, Saturation, and Luma qualifier controls to refine the mask, isolating as much of the woman's face and arms as possible, while minimizing the areas of the background that are included in the key (**Figure 1.9**). If necessary, we can use blur to minimize chatter in a challenging key. Then, after isolating the skin tones, we'll invert the mask using the appropriate control to limit our next adjustment to the outside of the isolated area.

With the isolating matte in place, we'll use the Gamma color balance controls to push the scene toward blue, while simultaneously lowering the saturation so that the cool look we're giving the outside is muted, rather than vivid. To ensure the blacks stay black (I'm not a fan of color casts replacing 0 percent black), we'll also make a small opposite adjustment to the Lift color balance adjustment to balance the bottoms of the waveforms in the RGB Parade Scope.

Figure 1.9 An HSL Qualification will isolate the woman's skin tones by inverting the matte and using the result to grade everything but her skin.

The resulting correction appropriately protects the woman's highlights and midtones. However, even though we haven't done anything to change the woman's skin tone, the image now looks a bit ridiculous; reduced background saturation and complementary color contrast exaggerates the perceived colorfulness of the woman's face, making her pop out like orange soda. It's pretty obvious the woman isn't interacting with the new illuminant of the scene, and the result is clearly artificial-looking.

To fix this, we'll need to add a third correction, using an inverted version of the mask from the HSL Qualification we've already made.

Once we've set up an inverted qualification as an additional correction, it's a simple thing to reduce the saturation of the woman's skin tone to make it fit in better with the color level of the scene. It's also a good idea to use the Gain color balance control to push her highlights a bit toward blue so that it looks like she's catching a bit of the light from her surroundings (**Figure 1.10**).

Figure 1.10 Adding another correction to make the woman's complexion integrate more realistically with the background

The result is still a bold correction but one that looks plausibly naturalistic. This technique is useful whenever you're making a bold environmental adjustment that you're afraid will make people within the scene look terrible. It's also a way to make an actor pop out at the viewer a bit better in a scene that doesn't have a lot of color contrast where they're blending too much into the background.

COPYING SKIN TONE FORWARD IN COMPLEX GRADES

When you're working on a program that calls for aggressive grading, it can be challenging to keep the talent from disappearing inside of the look you're imposing on the scene. When you're building a carefully calibrated stack of operations and you realize that you need to bring a little realistic skin tone back into the image, many grading applications have the facility to steal a portion of the image from a previous layer or node of your current series of operations and insert it later, where it's needed. In the following example, a long series of exploratory tweaks has led to the look in **Figure 1.11**.

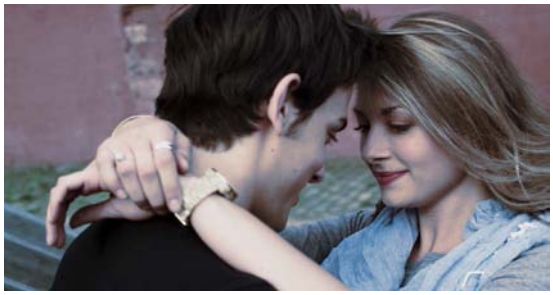

Figure 1.11 An aggressive grade has a not-so-appealing effect on the skin tones of the image.

The skin clearly needs some help, but the client likes the color treatment's effect everywhere else so much that you're hesitant to mess with the four operations that have gotten you here. If your application is able, you can sometimes isolate image data from a prior operation using a window or qualifier and then overlay it on top of an operation at the end of the grade. **Figure 1.12** shows this at work as it's done in DaVinci Resolve, where node 6, which isolates the skin tone via a qualifier, is pulling image data from node 1 at the very beginning of the grade and feeding it (via the Layer Mixer) over the top of the state of the grade at node 4.

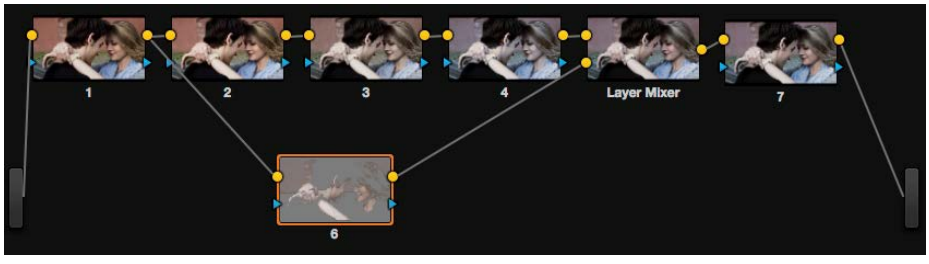

Figure 1.12 Node 6 is used to take image data from node 1, isolate and alter the skin tones, and feed them over the top of the state of the image output by node 4.

When you first do this, the skin tone will likely not match the scene at all, but a few adjustments to bring the average look of the isolated skin closer to that of the scene can have very pleasing results (**Figure 1.13**).

Figure 1.13 The final result of copying clean skin tone from earlier in the grade and adapting it to match the look of the aggressive grade created several operations later

DON'T START E-MAILING ME ABOUT ORANGE AND TEAL

I've gotten a kick out of a series of articles that made the Internet rounds years ago concerning the merits and demerits of accentuating flesh tones against cooler backgrounds, which has been labeled of "the orange and teal look." One outstanding overview (with images) is Stu Maschwitz's "Save Our Skins" (www.prolost.com); a pointed critique of the entire trend is blogger Todd Miro's more humorous take on the subject, "Teal and Orange—Hollywood, Please Stop the Madness" (www.theabyssgazes.blogspot.com).

Here's the thing—as I hope this book illustrates, modern color correction technology makes it straightforward to achieve a high degree of color contrast by segmenting images and applying individual corrections to each element within, as shown in the previous example. This has nothing to do with particular color schemes (those are created by the art department), but it has everything to do with how you maintain color separation in the face of aggressive grading or lighting. I'd also like to point out that not every aggressive use of color is the fault of the colorist. Cinematographers have been using colored gels to splash color around the set for decades (and I've had a few shows where I needed to tone down excessive colored light in the photography at the client's request).

As discussed in Chapter 3 of *Color Correction Handbook*, the hues of naturalistic lighting range from the cool (bluish) to the very warm (tungsten and "golden hour" oranges); there aren't a lot of ordinary scenes where you'll be dealing with either magenta or green hues in the fill lighting.

Furthermore, we've seen that human skin tone naturally falls within the orange to red hues. This means that if you're planning on maintaining high color contrast within a wide variety of relatively naturalistic, but exaggerated and highly saturated lighting schemes, sooner or later you're going to be dealing with various interactions between warm actors and cool backgrounds—unless you're going for green actors against purple lighting. The problem, when there is one, is not with the hues.

Exaggerated color treatments go wrong when the grades distract from the content of the program, calling attention to some particular quality other than the image as a visual and narrative whole (although if you're grading a music video or promo, that may be the point). Digital color treatments are usually distracting in one of two ways.

continues

DON'T START E-MAILING ME ABOUT ORANGE AND TEAL *(continued)*

- **Oversaturated skin tones:** As stated earlier, the saturation of skin tone varies, but ordinary complexions have a relatively subdued upper limit, and the perception of colorfulness will vary with the saturation of the surrounding environment. If the environment is muted, or dominated by a complementary color (bluishness), the perceived colorfulness will be *intensified*, so a naturalistic treatment would demand less saturation in the skin tone to keep it from seeming exaggerated.
- **Overprotected skin tones:** Skin interacts with the color of the scene's dominant illuminant. If the environment is cool but the skin tone doesn't reflect that, the result looks like a greenscreen composite where the foreground layer wasn't color corrected to match the background.

At the end of the day, if it's a paid client session, I present various options and then go with the one they choose. My personal inclination is to try to keep even stylistic grades within the realm of visual plausibility, but if the client wants something really bold, the tools are there to create that. As many others have observed, excessively isolated skin tones will doubtless become a visual hallmark of the turn of the century, but don't blame the hues; it's not their fault.

CHAPTER 2

BLEACH BYPASS LOOKS

One of the more popular looks among those who have achieved brand-name status is the bleach bypass effect. This method of film processing was popularized over the years by its use in films such as *1984* (cinematography by Roger Deakins), *Delicatessen* (Darius Khondji), *Three Kings* (Newton Thomas Sigel), and *Saving Private Ryan* (Andrzej Bartkowiak).

Bleach bypass (also referred to as *silver retention* or *skip bleach*) refers to a specific process whereby the colorist skips the bleaching stage, which removes the exposed grains of silver that initially formed the image. The silver grains remain on the negative, creating greater density, which increases image contrast, intensifies grain, and reduces saturation.

Silver-retention processes have been developed by many different film labs, mainly to manipulate contrast, deepen (and crush) shadows, alter saturation, blow out highlights (sometimes), and increase grain when you're working with projects shot on and destined for printing and color timing on film.

When clients ask you for a bleach bypass look, you might first ask them to describe, in simple terms, how they want the image to look. If all they want is darker shadows, higher contrast, blown-out highlights, or less color saturation, you can probably make these adjustments using simple primary color correction and curves.

NOTE

There's an excellent article on silver-retention processes, "Soup du Jour," in the November 1998 issue of *American Cinematographer*, available at www.theasc.com.

SIMULATING THE LOOK

The essence of all silver-retention processes is the superimposition of a grayscale duplicate over the image. The density of the duplicate varies with the desired increase in contrast and reduction in saturation.

There is no single bleach bypass look. Instead, numerous variations and variables are usually customized to a particular project's needs. The following two techniques are simply my approaches; if you talk to ten colorists, you'll be told ten different ways of doing this, each with numerous variations.

In fact, ask ten clients what they think bleach bypass should look like, and you'll get ten different answers.

METHOD 1

This first method covers how to create a bleach bypass–styled look using simple corrections. You achieve the increased blacks density using DaVinci's luma-only contrast controls, which selectively adjust the **Y'** channel without affecting the red, green, or blue channels. Luma-only contrast control is also found in other applications (such as Quantel's Fettle curve interface), and the practical result of raising luma contrast while perceptually diminishing image saturation is extremely helpful for this type of look.

The initial shot in **Figure 2.1** is ideal for a bleach bypass treatment. It's an exterior shot from a sunny day, and the client is looking for a hot (temperature-wise), remote-feeling treatment for the scene.

Figure 2.1 The original shot to which we'll be giving one version of a bleach bypass look

To create the type of contrast you need for this effect, you need to handle the adjustment in these steps:

1. To prepare the shot for the intense luma-overlay look you want, begin by adding a correction that does the opposite of what you ultimately want. Use the YRGB (luma/red/green/blue) master contrast adjustment controls, or the contrast and pivot controls, either of which adjust contrast by altering all components of the signal at once, to *compress* the contrast, thus raising the shadows and lowering the highlights by 10 to 15 percent/IRE. How much you compress depends on how extreme you want the contrast density to be; more compression paves the way for higher contrast, while less compression is necessary to create less contrast.

2. Next, adjust the Gain color balance of the scene to be a bit warmer (just a touch), while you keep the Gain color balance neutral. It's a warm day, after all.

3. Now add a second correction; this is where the magic happens. When you move from the YRGB contrast controls to your application's **Y'**-only contrast

controls, lower the Lift contrast control and raise the Gain contrast control; this expands the contrast of the **Y'** (luma) channel without expanding the chroma components.

As you learned in Chapter 2 of *Color Correction Handbook*, raising **Y'** without affecting Cb or Cr results in higher contrast at the expense of the saturation of the scene (which is perceptually reduced), so you've killed two birds with one stone. You now have great black-shadow density and muted colors throughout the image (**Figure 2.2**).

Figure 2.2 At left, we've reduced the contrast with an initial correction in order to raise contrast in the second image (right) using a luma-only adjustment.

4 Next, sculpt the saturation a bit more. By adding a third correction, you use HSL Qualification to isolate a wedge of the midtones. Then, switch to the outside of this key (in Resolve you do this by adding an Outside node) and desaturate the highlights and shadows together, to taste (for this correction, I dropped saturation by about 85 percent). This increases the appearance of density in the shadows and more "bleached" highlights.

NOTE

I think it's inaccurate to say that the bleach bypass effect is desaturated. There's plenty of color in photochemical skip-bleach footage; it's just tonally isolated. That's not to say you can't deliberately desaturate it yourself; at this point, it's all a matter of personal taste.

5 Switch back to the inside of the key and increase the saturation just a touch (I've added 10 percent to the example in **Figure 2.3**).

Figure 2.3 Isolating the midtones in order to partially desaturate the highlights and shadows, while very slightly boosting midtones saturation

6 Lastly—and this is purely a matter of taste—you might elect to add one last correction, using a very small amount of sharpening (I've added about 10 percent) to give the shot a grittier look. There is a justification for this: The skip-bleach photochemical process usually emphasizes film grain, and increasing sharpness will emphasize whatever grain, noise, or texture there is in your shot.

TIP

When adding sharpening to a shot, make sure not to overdo it. Excessive sharpening might seem like a good idea at the time, but it almost never looks as good the morning after.

Figure 2.4 shows the node tree of corrections that have contributed to the final effect.

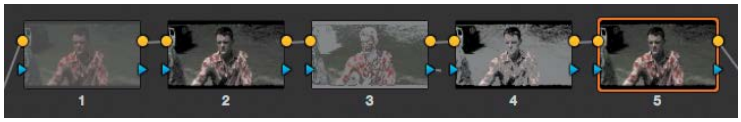

Figure 2.4 The node tree we've used to create our bleach bypass effect, shown in DaVinci Resolve

Now that we're finished, let's compare the initial image (**Figure 2.5**, left) with the final bleach bypass look we've created (**Figure 2.5**, right).

Figure 2.5 Before and after, with bleach bypass and a bit of sharpening giving the original image (left) some punch in the final version on the right

To reiterate, here are the different aspects of the shot that you could customize to make this look your own:

- Change the amount of luma contrast (using the **Y'**-only contrast controls) and the density of the shadows (by bending the shadow segment of a luma curve).
- Alter the amount of desaturation in the highlights and shadows and the overall image saturation (many bleach bypass effects I see drop saturation more dramatically).
- Increase or decrease sharpening or introduce simulated film grain if you really want to make it gritty.

You can also combine this effect with selective saturation based on hue. In the example used in this exercise, desaturating just the greens of the grass a little bit would serve to warm up the shot even more by reducing the amount of color contrast in the scene to emphasize the already existing orange hues throughout.

METHOD 2

Using this second method, we create the bleach bypass look by superimposing a desaturated correction (or layer or scaffold) on top of the base grade (or the original clip) and then combine the two images using one of several composite modes before we color-correct the underlying clip to fine-tune the effect.

This technique works with any application that lets you layer grades or clips and combine them using composite modes. In this example, you'll use Assimilate Scratch to create the effect.

1 As before, create an initial version of the clip that has healthy contrast, good lightness for the situation, and slightly muted saturation.

2 Next, add a correction, scaffold, layer, or strip that you'll use to create the superimposed layer of shadow density. Within this layer, desaturate the image completely and then use a luma curve to deepen the shadows, while leaving the highlights alone (**Figure 2.6**).

Figure 2.6 Another way of creating increased shadow density: combining an uncorrected image (left) with a desaturated version of itself (right) using composite modes

3 With that accomplished, blend the result with the underlying grade/layer using Scratch's Luminosity composite mode (**Figure 2.7**).

You've now achieved the first part of the look; the image becomes extremely high-contrast, with dense shadows. *Luminosity* is an interesting composite mode to use for this effect, because it combines the luma from the top layer with the chroma from the bottom layer. In this instance, it reinforces the darkest parts of the image, creating the increased shadow density you need for this look.

Figure 2.7 The composite modes available in Assimilate Scratch

Depending on your application, you could also use other composite modes for different variations, some of which may work better with clips of different exposures.

- **Overlay** is another good choice, if available, as it preserves the brightest values in areas of the underlying picture above 50 percent and the darkest values in areas of the underlying picture below 50 percent. Using Overlay essentially pushes the contrast by adding another layer of image density.
- **Multiply** often yields a darker result as a function of the white areas of the superimposed correction layer going completely transparent and the blackest areas remaining pitch black.
- The **Soft Light** composite mode often leaves a bit more midtone detail intact and affords more control over the highlights.

Using Luminosity, the resulting image is a bit dense, so finish by making further adjustments to the underlying primary correction (or the bottom layer).

4 Raise the Gain contrast control for the Primary grade to bring more detail back into the image. The highlights are rather intense, so you may want to lower them a bit, as well.

5 Finally, do the same thing you did previously, using the Luma qualifier to isolate a soft wedge of midtone image tonality, to invert it, and to desaturate both the highlights and shadows outside of this range, thus muting the colors at the extremes of the image without eliminating them (**Figure 2.8**).

Figure 2.8 The final image after compositing the luma layer and doing some selective desaturation in the highlights and shadows

At this point, we're finished. You should absolutely experiment with other composite modes in your grading application of choice to see how the different corrections/layers interact; you'll probably find some happy accidents you can use.

CHAPTER 3

BLUE-GREEN SWAP

The following technique is a simple, but effective, way to create strangeness within an image. It requires that your grading application have the ability to do channel reassignment, because the idea is simply to swap the blue and green channels with one another, effectively substituting the grayscale image from one channel with that of another (**Figure 3.1**).

Figure 3.1 The original image is shown on top. The image below it shows the effect of swapping the blue and green channels with one another.

The advantage to leaving the red channel alone is that you leave skin tones, which have large amounts of red, somewhat human-looking, giving the scene an anchor of normalcy despite the skies, greenery, and other features of the image looking completely wonky.

Different applications have different ways of performing color channel reassignments. DaVinci Resolve lets you do this via a set of buttons in the Channel Mixer. Assimilate Scratch has a set of three-color channel mixer pop-up menus in the Levels section. You can use these pop-ups to assign the blue channel data to the red channel of an image by selecting R=B from the first pop-up (**Figure 3.2**).

Figure 3.2 The channel reassignment pop-ups in Assimilate Scratch

A good tip for using this effect is that, as with all effects, you don't need to apply it to the entire frame. You can use it in combination with the blurred and colored vignettes technique described in the next chapter to add a bit of selective strangeness as an accent, rather than as the main event.

CHAPTER 4

BLURRED AND COLORED VIGNETTES

This next technique is another way of using shapes/Power Windows to make some wild iris effects. The basic idea is to use a shape to add a combination of color and/or blur to the outer border of an image. I first pulled this out for a dream-sequence opening in the feature *Oral Fixation*. Shortly thereafter I also saw the same idea used in 2008's *Wanted* (Stephen J. Scott, Supervising Digital Colorist, EFILM) to indicate altered perception for a character's point of view (POV) shot. This technique works best when you're using a shape with an extremely soft edge. In the following example, a soft oval is used to limit a Gaussian blur and Gain color balance adjustment toward red to the outer edge of the image (**Figure 4.1**).

Figure 4.1 A blurred, colored vignette provides an easily altered sense of reality.

This idea can be combined with an aggressive grade inside of the shape or with the cross-processing simulation technique presented in Chapter 5 to create nonlinear alterations to image color.

In **Figure 4.2**, a seemingly innocuous establishing shot of a house is lent a faded, vintage air by virtue of two different curve operations messing with the color channels, one inside and one outside of the vignette.

Figure 4.2 Different cross-processing simulation effects applied to the inside and outside of a vignette. The blurring is already there, courtesy of the moving camera's motion blur.

Never underestimate the effectiveness of a simple vignette.

CHAPTER 5

CROSS-PROCESSING SIMULATION

Cross-processing is a means of abusing the chemical development process by using the wrong developer for a particular type of film. The goal is a kind of Russian roulette of creativity: The mismatched developer creates strange and wonderful color channel interactions that can lend a haunting beauty to many subjects (**Figure 5.1**).

Figure 5.1 Three examples of photochemical cross-processing

Colorists typically use three types of cross-processing.

- Processing color reversal slide film using C-41 chemicals (which are intended for color negatives). The result is typically increased contrast and strong color casts running from the shadows through the highlights.
- Processing color negative film in E-6 chemicals (which are intended for slides). This usually results in muted pastels with low contrast (see Chapter 10).
- Redscale isn't actually a chemical process; instead, it refers to the technique of loading film backward in the camera (it's not a mistake; it's a technique!). As a result, the red layer is exposed first and then the green layer. The blue layer, because it is upside down, is not exposed at all because of the blue that separates it from the other two layers (**Figure 5.2**).

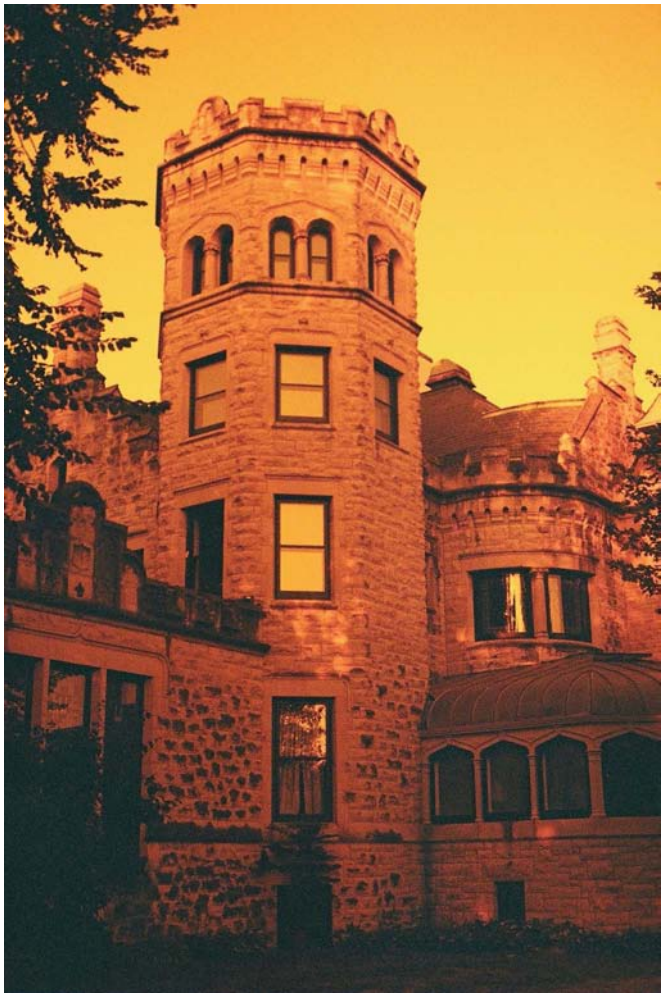

Figure 5.2 A photograph shot using the Redscale technique. Source: Wikipedia.

When you alter a photograph chemically, you never quite know what you're going to get (although there are common characteristics depending on the film/developer combination you use), and I understand that's part of the fun for photographers.

Fortunately, for professional colorists, there's a digital way of manipulating the color channels using color channel curves that provides similar image characteristics, with the bonus of a great deal more control over the final result—not to mention the ability to undo. This can make for a great library of varied effects for music videos, fashion clips, or any shot or scene for which you want a distinctive, color-altered look.

ACHIEVING THE CROSS-PROCESSING EFFECT USING CURVES

Let's take a look at three sets of curve corrections that we can use to accomplish this type of color stylization. Bear in mind that, in the way I use this technique, I'm not looking to precisely emulate any particular combination of film stock and chemical bath so much as to evoke the type of color-channel distress this process creates. I generally just keep tweaking until I like the result.

First, let's take a look at what I consider to be a classic look: S curves on the red and green channels and an inverse S curve on the blue channel (**Figure 5.3**). The result boosts yellows in the highlights, promotes blues in the shadows, and minimizes tinting within the midtones (depending on how close to neutral you keep the middle of the curves).

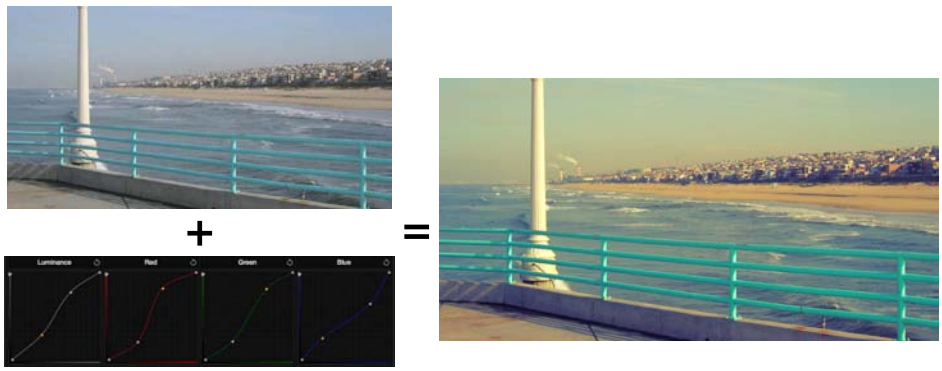

Figure 5.3 A gently yellowed cross-processing look, with hints of green and cool blue shadows

Leaving the contrast largely alone, the result is a pleasingly faded, yellowed look—a bit vintage, a bit edgy, and the abundance of yellow lends the scene a subtle energy. It's a nice subdued look with lots of room for variation.

Next, we'll try a slight inversion of the previous version using an inverse S curve for the red channel, an S curve with lifted black for the green channel, and a simple gamma lift (one point in the middle of the curve, raised up) for the blue channel. The result, shown on the right in **Figure 5.4**, is a pastel combination of greens and blues in the highlights, with a pale blue cast running through to the shadows. Lifting the bottom of the luma curve additionally adds a washed-out quality to the grade that complements the shallow feel of the color.

Figure 5.4 A completely different set of curves creates a completely different cross-processing look. Notice that lifting the black point of the green channel, along with the black point of the luma curve, lends the image a washed-out look.

The result is also faded, but with milky blacks that feed straight into the pervasive blue cast. Reds remain throughout the image, but the variety of cool and green overtones lends a melancholy air.

Finally, let's take a look at one possible way to create a Redscale look. The general idea is to massively subdue (or even eliminate, depending on how far you want to go) the blue curve by cropping the highlight control point down to the bottom. Meanwhile, introducing a gamma boost to the red curve emulates the overexposure of the red layer of emulsion, and a slight gamma boost to the green channel preserves some yellow tones-color contrast that keeps the look from being a simple red tint (**Figure 5.5**).

Figure 5.5 A simulated Redscale look, emulating film that was loaded backward when exposed

The result is a sharp, high-energy look completely appropriate for the nightclub shot we're applying it to (funnily enough, there wasn't a whole lot of blue in the image to begin with, so flattening this channel all by itself didn't do a whole lot).

TIPS FOR CROSS-PROCESSED LOOKS

I've created a library of cross-processing effects over the years that I like to call my "what the hell" collection. If a client wants something bizarre but can't articulate what they desire (usually saying something like "surprise me"), I start applying different variations I've come up with from different projects, and if the client perks up during a particular look, then I use it as a starting point for their very own stylization, tailored appropriately to the scene.

Along these lines, keep in mind that the result of any particular "distressed curve" set is *highly dependent* on the tonal range found within the target shot. Darker shots will react far differently to a given cross-processing preset than lighter shots, as you can see in **Figure 5.6**.

Figure 5.6 Applying each of the three grades shown previously to an entirely new clip. As with the photochemical process, you're never quite sure what you're going to end up with.

As you explore this compelling technique for distressing the colors of your images, here are some tips to keep in mind:

- S curves increase channel strength in the highlights while lowering it in the shadows. An *inverted S curve* lowers channel strength in the highlights while increasing it in the shadows. Applying S curves on some channels and inverted S curves on others creates nonlinear color interactions.
- S curves and inverted S curves let you keep the midtones close to the original color values, depending on how much you care. Since human skin tones fall within the midtones, this lets you retain some vestige of naturalistic skin tones while you're ripping the color channels apart for nefarious creative gain.
- Linearly scaling color channels makes it harder to pin the midtones, but this lets you alter the entire image via that channel (as with Redscale when you drop the top control point of the blue curve all the way down to the shadows).

NOTE

It's extremely easy to blow out the highlights of individual color channels when you're creating these types of looks. Make sure you have a good handle on RGB legalization if you're working on a program for broadcast, and beware of the dangers of excessive saturation in the highlights and shadows. You may need to drop the highlights and/or raise the shadows in a subsequent correction in order to prevent unwanted QC violations.

- Lifting a color channel helps wash out the shadows, resulting in tinted blacks. Keeping the bottoms of each versus having them pinned at 0 percent/IRE lets you retain absolute black, no matter what you're doing throughout the rest of the image.
- Lowering even one color channel below 100 percent/IRE results in tinted highlights, while pinning them to 100 percent lets you retain absolute white.

With this in mind, it's useful to previsualize the cross-processing look you want by asking yourself what dominant color you'd like in the highlights, what dominant color you'd like in the shadows, and what type of color (neutral or tinted) you want within the middle midtones.

CHAPTER 6

DAY-FOR-NIGHT TREATMENTS

Soon it got dusk, a grapy dusk, a purple dusk over tangerine groves and long melon fields; the sun the color of pressed grapes, slashed with burgandy red, the fields the color of love and Spanish mysteries.

—Jack Kerouac, *On the Road*

Day-for-night is a technique for shooting during the daylight hours and simulating an evening look. It's used frequently by productions that need to cover night scenes but don't—have the budget or the time to actually light a location for night shooting (size of the location is no excuse; remember the lit-up buttes of Monument Valley seen in Ridley Scott's *Thelma and Louise*).

Ideally, you'll be working with the cinematographer to extend a day-for-night look that was started by the lighting on the original location. Day-for-night scenes have been shot for decades using in-camera effects and lighting techniques, with an emphasis on the following:

- Keeping depth-of-field shallow (night shoots with cameras shooting wide open don't typically have large depth of field).
- Framing skies out as much as possible and positioning sunlight behind the camera. Shooting during dusk cuts down on bright skies being a problem, but graduated optical filters and polarizing filters are also used to cut down sky light.
- Using neutral-density filters and filters designed to deliberately lower contrast to mute the lighting and color within the scene.
- Setting up the overall lighting scheme to throw as much of the background into shadow as possible, while keeping the foreground subjects lit appropriately to their environment. Silver reflectors are often used to provide soft, "cool" moonlight.
- Underexposing by 1.5 to 2 stops to mute the scene, reinforcing a nighttime look.

Even in less-than-ideal circumstances, when a shot has been photographed without any of these points in mind, there are various options for digitally relighting a shot to create a credible night look.

NOTE

Print reproduction of the example images in this chapter is tricky since the images are so dark. Just keep in mind that day-for-night looks really depend on carefully riding the balance between deep blacks and the retention of just enough shadow detail to prevent the image from getting too gritty and unpleasantly flat.

THE LOOK OF ACTUAL NIGHT

Before we dive into various techniques for fakery, let's take a look at the real thing to remind ourselves of the important characteristics that true night scenes share. The following four shots in Figures 6.1 through 6.4 have been lightly graded with a simple primary correction, enough to finish the look begun on location, while leaving the original lighting schemes intact.

The first still (**Figure 6.1**) is of a street-lit scene in a romantic comedy.

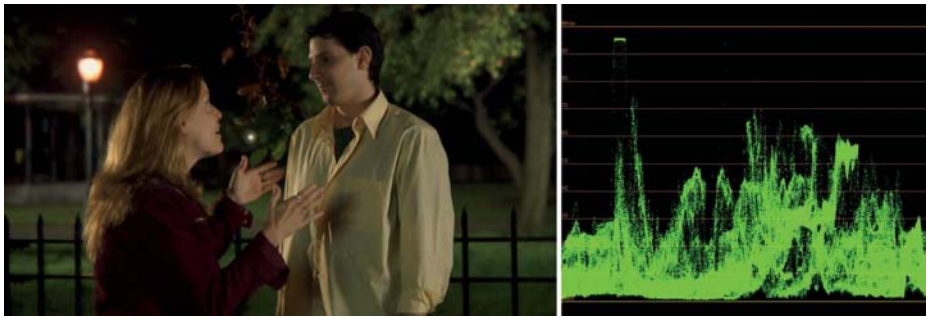

Figure 6.1 An exterior night scene

Examining the Waveform Monitor in LOW PASS (LP) mode (Figure 6.1, right), we can see that the shot isn't particularly underexposed, which brings me to my first point. Just because it's night doesn't mean the highlights of primary subjects in the shot are going to be underexposed. The average light in the scene won't be particularly *bright*, but it's perfectly acceptable to have healthy highlights in the scene, especially light sources.

What's important is to ensure that the environmental light makes sense. Notice how the sky is pitch-black, a primary visual cue of night. Shadows are deeper, especially in the distance, and the color temperature is an artificial hue (somewhat orange, in a nod to sodium vapor lighting). Despite the healthy highlights and midtones, there's enough shadow falling on the actors to indicate the varied direction of practical light sources in the scene. Nobody would confuse this with a daylight scene.

This next shot (**Figure 6.2**) is an evening interior shot in a garage.

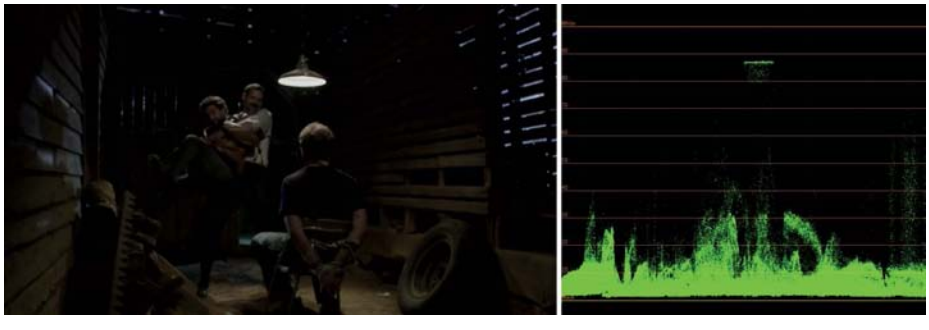

Figure 6.2 An interior on-location night scene, with artificial illumination highlighting the slats of the garage

The stylistic goal here is to create sharp highlights within pools of black. However, notice that the blacks aren't deliberately crushed, maintaining some valuable shadow detail down around 3 percent/IRE that contributes texture to the environment, despite the darkness. Contrast is higher in this scene in terms of high key rim lighting providing visibility rather than lower key fill lighting, but even though the average lightness is lower than in Figure 6.1, there are still numerous environmental highlights breaking through the blackness, which serve to give shape to the space.

This next shot (**Figure 6.3**) is a car interior.

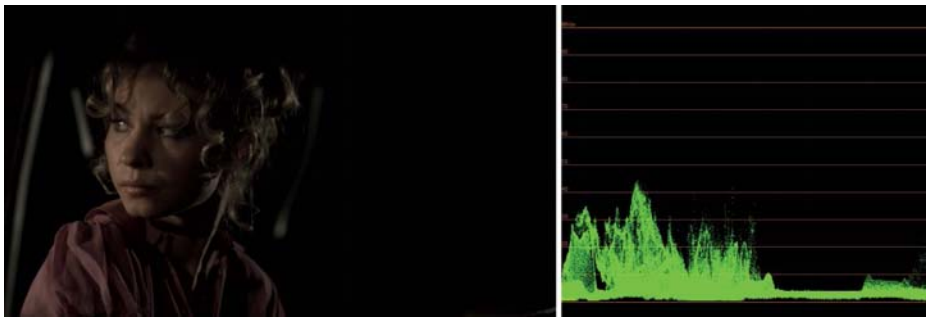

Figure 6.3 Night inside of a car. Not crushing the blacks gives us a faint sense of space.

Here, the lighting setup is naturally vignetting the actor. This is a very dark scene, and yet the highlights on the woman's face are still extending above 35–40 percent/IRE. Simultaneous contrast dictates that the predominant low blacks in the frame will make these highlights seem brighter than they actually are, which works to our advantage. But there's no need to make her any darker; the shadow ratio falling on her face and upper torso speaks volumes about the low lighting conditions in the scene, and it allow us to have a bit of pop in the sparkle of her eye. Again, notice that although the darkest shadows touch 0 percent/IRE, other shadow detail at the bottom of the scale is *not* crushed to solid black, leaving the audience some sense of the surrounding environment, dark though it is. Environmental lighting cues make the scene.

Finally, let's take a look at a shot from the penultimate scene of a thriller (**Figure 6.4**).

Figure 6.4 A wholly interior night scene. Careful control must be exercised over the lighting to avoid having it look like daytime in the absence of clear visual cues like darkness outside a window.

This shot uses a classic cool, even bluish, evening lighting scheme, with a bit more environmental illumination than in the previous figure. However, the lighting is dappled, mimicking light falling through curtains, blinds, or through trees. This allows the pools of light and shadow that signify evening, even though there are some highlights in the scene that extend up to 100 percent/IRE. They also allow some visibility of key elements of the shot (her face and arm as she advances), as well as providing opportunities for sudden visual revelations, as when her knife-wielding hand passes into a beam of light.

So, to distill out some shared characteristics, key lighting signifiers of night include the following:

- The sky is absent, or black inky skies hammer home the lack of sunlight.
- Direct highlights can indeed extend all the way to 100 percent/IRE.
- Subject highlights and midtones don't have to be underexposed, but there should be a high ratio of light to shadow.
- In low-light conditions, reds are the first hues our eyes lose sensitivity to, resulting in a selective partial desaturation of red-hued elements in the scene.
- The overall environment should have a healthy amount of shadow relative to the practical light sources perceived by the audience. Distant areas, especially, should fall off toward total darkness.
- It's not necessary to crush the blacks to a uniform pool of 0 percent/IRE to get a night look; in fact, you may end up with a nicer-looking shot if you retain some of the texture and environmental definition that a bit of shadow detail provides.

CREATING AN EXTERIOR DAY-FOR-NIGHT LOOK

As mentioned previously, the best day-for-night looks are achieved in conjunction with clever lighting on the set. Every once in a while, however, you'll be asked to regrade a shot that wasn't originally intended to be a nighttime scene. In these instances, you'll likely employ a variety of techniques to modify different aspects of the picture to match, as closely as is possible, the desired nighttime look.

For example, the image in **Figure 6.5** was originally shot to look like it takes place in daylight, probably the afternoon.

As is often the case, the director decided later in post that the scene would be more effective if it took place at night, which requires substantial modification. Although at first blush this scene hardly seems ideal, a quick look at the shot reveals some things working in your favor.

Figure 6.5 The original, untouched exterior shot. Now it needs to be nighttime.

First, the shot is surrounded by shrubbery that provides a natural vignette, and second, the shadows on the ground are very soft, which will aid you when it comes time to lower the overall contrast of the scene. With these two observations in mind, you can tell the director in good conscience that it's worth a shot.

In cases like this, it's best to have a good look at the image and break it down into different zones that need to be addressed (**Figure 6.6**).

Figure 6.6 Visualizing and strategizing the image segmentation we need to accomplish

- The overall shot needs to be darker, with deeper shadows. You can accomplish this with a simple contrast adjustment.
- All parts of the image will benefit from less saturation and a cooler color temperature.
- The area surrounding the foreground subject needs to have a plausible light source justifying the illumination of the man. You can achieve this easily with more shapes/Power Windows. Everything outside of this pool of light should then be darker, with a smooth graduated falloff between the two zones.

- The distant background (the trees and shrubs behind the car) need to be even darker. You can do this using a second shape/Power Window.
- Any remaining highlights need to be compressed. This is a good task for a combination of luma curves and HSL Qualification.

The important thing to bear in mind is that day-for-night adjustments of this magnitude nearly always require several multiple corrections or layers. Once you've identified the different parts of the shot that need to be modified and you've created a game plan, you can proceed with implementing the correction.

CREATING THE LOOK

Let's give it a shot. Keep in mind that when you're making extreme changes like this, the goal is not to create a *perfect-looking* night; that might be impossible. The goal is to create a *plausible-enough* night look so that the audience goes for it. In this example, we'll focus on the visual cues we identified in the previous section.

1 Start with your initial primary correction. Darken the midtones by lowering the Gain contrast control, roll off highlights by adding a control point to the middle of the luma curve and dragging the curve's topmost point down, and then desaturate the image by about half. This gives you the initial deep shadows, lower contrast, muted highlights, and reduced color sensitivity you need to start this look (**Figure 6.7**).

Figure 6.7 The initial primary correction, setting the tone for later adjustments

2 Next, justify the light falling on the man by adding another correction, a secondary, using a shape/Power Window to create a pool of illumination for the scene, as if moonlight were breaking through the trees and illuminating him by the side of the car.

As you draw your shape, it's important to follow the contours of objects in the scene if you want to create a convincing effect. In this example, the light would hit the one side of the car, surround the man, and fall off to the left and right along the plane of the ground.

With the shape drawn, lower the Gain contrast control a bit more, and shift the color balance of the highlights so this pool of light is cooler—not *blue*, just cooler (**Figure 6.8**).

Figure 6.8 Adjusting a shape to fit the location

3 Switch to the outside of the shape/Power Window; darken this outer region a lot more by lowering the Gain quite a bit and lowering Gain somewhat less.

You'll compress the highlights of the car even more by adding a control point to the bottom third of the luma curve and lowering the top point of the curve way, way down. You'll also desaturate the background a bit more, bringing what little color is left toward a slightly cooler side of neutral (**Figure 6.9**).

As you darken the outer environment of the shot, you may find yourself wanting to go back and make further adjustments to the inside of the shape that affects the man and the "pool of light" you created. That's good. Whenever you create artificial shadow ratios like this, it's important to constantly tweak both the artificial highlight and artificial shadow so that they appear to match as seamlessly as possible.

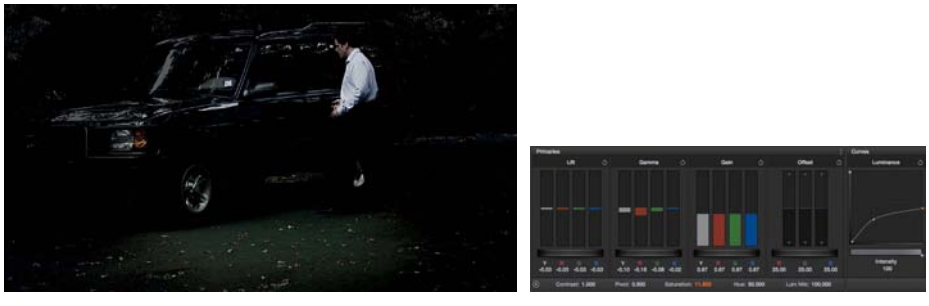

Figure 6.9 Darkening the area around our shape to create the look of a pool of light illuminating our hero

4 Next, add another correction, using a second shape/Power Window to compress the tree line and getting rid of all that background light while trying to retain a bit of texture, for depth (**Figure 6.10**). If you forced the background to all black, the result would be a flat-looking image, which is not desirable in this kind of exterior shot.

Figure 6.10 "Flagging" off the background tree line to darken the surrounding environment, heightening the sense of evening

5 Finally, the man's white shirt (an unfortunate costuming choice for a day-for-night scene) needs to be selectively dulled down. By adding a correction using HSL Qualification to isolate the shirt, you can lower its Gain down to the point where the effect just starts to look artificial so that raising it back up a few percent creates the final adjustment (**Figure 6.11**).

Figure 6.11 Using an HSL Qualifier to dull down his excessively bright shirt

As you can see, this grade required a multistep approach to create a credible result. Let's take a look at the serial node tree in DaVinci Resolve that creates this effect (**Figure 6.12**).

Figure 6.12 The serial chain of corrections used to create this look in DaVinci Resolve, although the corrections described could be done in almost any grading application.

Finally, let's compare the original shot (**Figure 6.13**, left) with our day-for-night effect (**Figure 6.13**, right).

Figure 6.13 Before (left) and after (right), the final effect

The result is a pretty convincing background framing a very plausible pool of moonlight illuminating the subject of the scene.

AN INTERIOR DAY-FOR-NIGHT LOOK

From time to time, you'll be presented with a scene that was deliberately lit to look like night, but the effect isn't working to the director's satisfaction. This may happen for a variety of reasons.

THE SCENE HAS THE WRONG COLOR TEMPERATURE

There are many approaches for lighting an evening or night shot. Is the primary source of illumination a bare light bulb in the garage or moonlight coming in through a window? Was there a stylized look to the original footage, such as an aggressive blue, purple, or green cast? Is it working, or is it too aggressive?

In some cases, scenes lit with professional tungsten instruments can have an overly warm, artificially lit look, especially when the director has called for moonlight (and then changed his or her mind after seeing the footage edited into a scene).

Fortunately, this is an easy fix using the color balance controls of a three-way color corrector. You'll be capitalizing on the tonal zone-specific nature of these controls to rebalance the color exactly where you need it.

THE SCENE IS OVERLY BRIGHT

Despite the nighttime setting, the scene may simply be too bright. Although the director may have a furrowed brow, you should be overjoyed. You'll always get better results by cutting down excess light levels than you will by boosting underexposed clips. Most cinematographers know this, so it's likely that the abundance of light may be deliberate to provide you with some flexibility in post.

In these instances, all of the standard techniques for controlling contrast are at your disposal, allowing you to reduce the highlights, darken the midtones, and either crush or boost the black level, depending on the look you're trying to create.

THE SCENE IS TOO EVENLY LIT

A different sort of problem occurs when the scene is too *evenly* lit. One of the hallmarks of nighttime locations is that light typically comes from very specific locations: a lamp, a bulb, or the moon through a window or doorway. As a result, light levels vary dramatically from one area of a nighttime frame to another. Furthermore, for dramatic purposes you're more likely to want the subject of the shot to have the maximum available light, while the background light levels fall off appropriately to the location.

In some instances, the director of photography may have deliberately created a lighting scheme that results in an evenly lit background with very consistent lighting. This may be an attempt to save money on a low-budget shoot by creating a lighting setup that works with a wide variety of coverage.

Inappropriately even lighting is a subtle cue of theatricality. Nobody would pick it out, but it does affect the audience's perception of a scene. If this is the case, you'll find yourself using vignetting techniques, masked corrections, and secondaries to selectively lower the lighting in parts of the picture.

You could modify this approach in many ways: making the color temperature cooler or warmer, making the highlights brighter or darker, using different kinds of vignettes, and varying levels of saturation.

CREATING THE LOOK

For this next example, we'll look at a simple correction to make an interior scene a bit more convincingly "late night." In it, we'll take an approach not so very different from the first example but tailored to the requirements of this particular scene.

Examining the image, we can see that the shadows are fairly elevated, and it's quite colorful and has an abundance of yellowish light coming from the practical light source next to the bed (**Figure 6.14**).

Figure 6.14 The original, ungraded shot

1 Starting with a primary correction, create a foundation for the look by increasing contrast using either your application's contrast and pivot controls to drop the shadows more than you increase the highlights, or by lowering the Gain master control to darken the shadows without crushing the blacks. If you want to keep a certain delicacy to the image, don't go lower than 0 percent/IRE for the darkest pixels in the image; if you're looking for a grittier result, go ahead and crush those blacks. Also cool off the Gain color balance so the lighting isn't so yellow, yet leave a bit of the warmth in; after all, the visible practical lighting instrument is a tungsten lamp.

   This has the added benefit of leaving a bit of color contrast in the lighting scheme, as it includes some cool blue light coming in from the window that falls within the midtones (**Figure 6.15**).

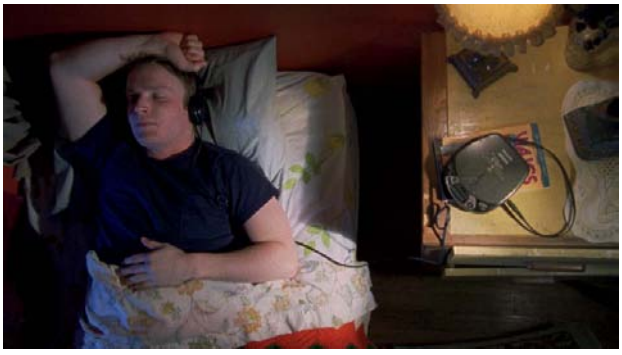

Figure 6.15 A primary grade to begin making it look more like night

2 Next, add another correction, this time a secondary with a very soft oval shape, using it as a vignette to cut out a pool for the areas of the image receiving light from the lamp (**Figure 6.16**).

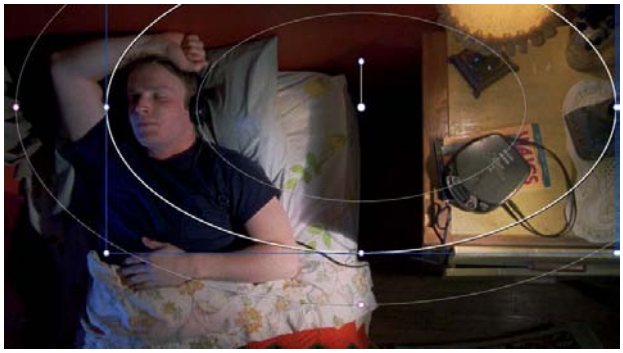

Figure 6.16 Carefully placing a vignette to introduce more shadows to the image

3 Finally, switch to the outside of the shape, lowering the midtone contrast in order to create more ambient shadow around the outskirts of the scene. By darkening the Gain rather than the Gain, you can lower the ambient light without overly crushing the shadows, preserving a bit of shadow detail.

4 A nice last touch is to also reduce saturation in the outer area by about 20–30 percent to knock the edge off of the shadows on his arm, the headboard, and the red edge of the bedspread, which should be somewhat muted in this light (**Figure 6.17**).

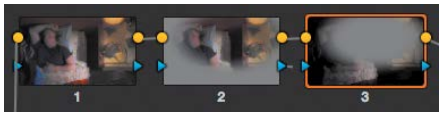

Figure 6.17 Saturation reduced in the outer area to cut down the shadows

Now that you're done, let's compare the original shot with our day-for-night effect (**Figure 6.18**).

Figure 6.18 Before (left) and after (right), the final nighttime interior grade

THE CLASSIC "BLUE" DAY-FOR-NIGHT LOOK

One of the classic treatments of night lighting, whether done on the set with lighting, on-location via lens filtration, or in post with color grading, is the blue moonlight look. We've all seen it; it's the color of romance, of mystery, and of, well, night.

Many drag-and-drop day-for-night filters fiddle with the contrast and then splash blue all over the highlights and midtones for an extreme version of this time-honored classic. With practice, however, this effect is easily and more subtly achieved using color balance controls, desaturation, and digital relighting using shapes/Power Windows.

Before going into this particular day-for-night look, it's useful to question the conventional wisdom that forms the basis for this color treatment.

WHY DO WE THINK OF MOONLIGHT AS BLUE?

As sunlight reflects off the moon toward the earth, the reflection of moonlight is generally considered to have a color temperature of around 4000K (warmer than daylight, cooler than halogen lighting). Recording the moon via film and video reveals this warmth (**Figure 6.19**).

Figure 6.19 Moonlight isn't actually blue; it just looks like it when we're in the dark.

This is clearly counterintuitive to decades of romantic scenes in color filmmaking, not to mention our general perception of moonlight. So, why the discrepancy?

Johannes Purkinje (1789–1869) was a Bohemian (he really was from Bohemia) professor of physiology who first discovered what is now called Purkinje's phenomenon, which essentially states that in low light we perceive more blue and green than red and yellow.

As light becomes less intense, our eyes become *scotopic*, meaning that our retinas switch from using the cones that are sensitive to color in well-lit conditions (*photopic* vision) to the rods that provide low-light sensitivity at the expense of reduced color perception (*scotopic* vision).

In general, we're less able to resolve color in low-light conditions, so everything becomes desaturated. Specifically, longer wavelengths (red-yellow) become less visible than shorter wavelengths (blue-green), even though they may actually be of equal brightness.

As a result, even though the moon is reflecting a relatively warm quality of light, in the absence of other lighting we don't necessarily perceive warm, nighttime lighting with the naked eye. In moonlit conditions, we perceive the romance of muted, moonlight blue.

Now, the question of whether to treat your clips with the classic (or old-fashioned, depending on whom you ask) blue night look depends on your visual goals. Certainly, there are other night treatments you can apply, depending on the type of program you're working on. However, it's undeniable that after decades of film and television viewing, the average audience member is conditioned to associate blue light with night, and it doesn't hurt to take advantage of this bit of cinematic literacy. The question is not necessarily whether to use blue but the intensity of the effect, and that is for you (and the client) to decide.

OTHER QUALITIES OF MOONLIGHT

A few other qualities of moonlight are worth discussing.

- The light of the full moon provides surprisingly high-contrast light, with sharp shadows when the moon is high enough. For this reason, cinematographers shooting day-for-night sometimes shoot footage with sharp shadows, with the rationale that one would be shooting film only by the brightest moonlight possible.
- Other, dimmer phases of the moon tend to produce significantly softer light, with lower contrast.
- The blood-red moon is another phenomenon caused by dust in the atmosphere and the moon's low position on the horizon. Depending on atmospheric conditions, a blood-red moon can have a secondary effect of throwing a reddish cast over the entire sky. Think "moonrise."

As with the other day-for-night techniques, a blue look is highly adaptable, and you'll never use the same settings twice.

CREATING THE LOOK

The image in **Figure 6.20** is yet another instance where the filmmaker originally shot the scene to happen in daylight, but during editorial, time was rearranged such that the scene needed to be moved into the evening. Fortunately, the lighting is controlled enough in this back-alley shot that it shouldn't be too much of a chore, and we have the freedom to use a bold visual cue like the blue look which will be a big help.

Figure 6.20 The original, ungraded shot

1 Start with a primary correction, and set the tone for the rest of this grade by focusing on the look of the woman's face, dropping the midtones a bit using the Gain contrast control and then flattening the highlights throughout the image by adding a control point to the bottom third of the YRGB curves and dragging the top control point down about 20 percent.

2 Next, cool off the overall image by pushing the Gain color balance control toward a distinct light cool bluishness and pushing the Gain color balance control a bit less toward cool blue. How blue you go depends on how theatrical you want to be, but in general a little goes a long way. Then, desaturate the overall image by around 20 percent to knock the color down a bit (**Figure 6.21**). Keep in mind that these values aren't meant to be precise; with these kinds of corrections, you're working by feel.

Figure 6.21 A primary grade to begin establishing the bluish nighttime look we want

NOTE

The contrast and color adjustments in this step could have been added to the previous correction, but I deliberately split up this last bit of "look exaggeration" into another correction to make it easier to modify or remove without affecting the base adjustment if the client later changed their mind.

3 Now add another correction; add, yep, you guessed it, a shape/Power Window. This time you're creating a highly feathered oval slash across the woman's face that you'll use to retain light on the highlights of the woman's face while darkening the background.

4 Starting inside the face, use the YRGB curves to add a bit of localized contrast in the shadows of her face while lowering the overall lightness of the image, adding control points at the bottom forth and just below the halfway point of the curve, to lock the upper midtones while you drag the bottom fourth curve point down to intensify (but not crush) the shadows of her face (**Figure 6.22**).

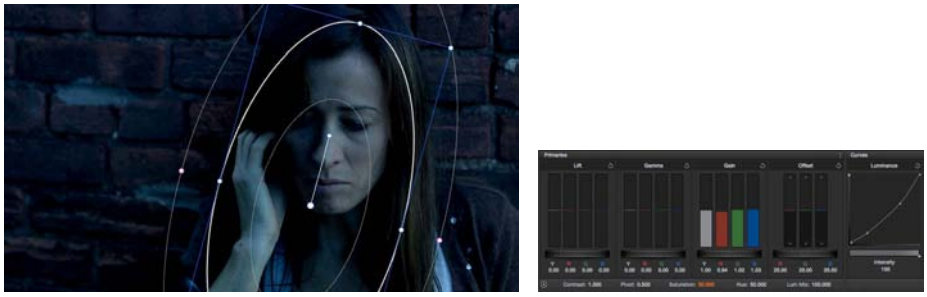

Figure 6.22 Adding a shape to create an angled slash of light

5 With that accomplished, move to the outside of the shape/Power Window, lowering the Gain contrast control to drop the brightness of the wall behind her, as well as the edges of her hair, down to a suitably night-like level (**Figure 6.23**).

Figure 6.23 We're almost done, but her arm is just too bright.

TIP

It's during marginal adjustments like this that you will truly appreciate using a properly calibrated monitor in a reference environment set up according to best practices.

As always, this is the trickiest part of the correction—you attempt to create plausible blackness while not overdoing it and losing detail that you'll regret. If you want to retain subtle detail in the image, avoid crushing the blacks past 0, but if your client wants a harsher look, then a bit of crushing can add that flavor.

Also, once you darken the outside region of this image, you may find you want to go back to the previous correction affecting her face and either darken or lighten it in order to balance the shadow ratio of the environment with the ratio of highlight to shadow falling on your main subject. Similarly, the amount of blue you apply to her face may need to be either increased or decreased after this adjustment to balance it with the overall environment. There's usually a fair amount of back and forth with this kind of adjustment.

6 At this point it's good to take a look at the overall effect to see whether there are any details disturbing it. To my eye, her arm in the foreground seems a bit well lit for such nighttime conditions, so add one last shape—a soft oval—over her arm and hand. Feathering it well, you can use this to drop the Gain, Gain, and Gain contrast controls to darken it enough to look like it's falling off into shadow. If your grading application has a good area tracker, then any movement her arm makes is probably not going to be a big deal in terms of making the shape follow it.

This last adjustment has the benefit of breaking up your more brightly lit oval, making the lighting effects seem a bit more organic (**Figure 6.24**).

Figure 6.24 Using a vignette to throw a shadow on her arm

Now that we're finished, let's compare the original image with the final effect (**Figure 6.25**).

Figure 6.25 Before (left) and after (right), the final blue night-time look

THE LOOK OF UNDEREXPOSED VIDEO

Every once in a while, you'll need to either match or re-create the effect of clips that were actually shot at night in low-light conditions, such as by candlelight or moonlight. In some cases, this may be to match existing shots that were intentionally recorded in those conditions. In other cases, this may be to artificially create the effect of underexposed video.

To successfully create such a look, it's a good idea to examine footage that was already shot using the camera you're trying to match. The video image in **Figure 6.26** was actually shot at night, by the light of a full moon, with no color correction applied.

Figure 6.26 Available-light video shot by the light of the full moon

Digital cameras are extremely sensitive and are capable of great feats in underexposed conditions. However, depending on the camera being used, mileage in low-light conditions will most certainly vary. Aside from the crushed blacks and overall dark picture you'd expect in such situations, most digital cameras share the following characteristics in low-light situations:

- **Increased noise:** Most professional cameras have a gain adjustment that allows the shooter to amplify the signal being recorded in order to increase image sensitivity. Unfortunately, this almost always has the side effect of increasing noise in the picture.
- **Low sensitivity to color:** As with the human eye, the color saturation of recorded digital imagery decreases along with the amount of light.
- **Reduced sharpness:** At low exposures the iris is typically open as wide as possible, so the captured image has the shallowest possible depth of field. This usually results in large portions of the image being at least slightly out of focus.
- **Crushed shadows:** Deep shadows are crushed to absolute black, although you'll notice there's still some texture in the clouds surrounding the moon.

All of these characteristics can be replicated using the various grading techniques we've seen elsewhere in this chapter.

CHAPTER 7

DUOTONES AND TRITONES

In a duotone, the darker portions of the picture are *toned* with one color, and the lighter portions are *tinted* with another.

Duotones come from the days of colored black-and-white movies, where the truly ambitious filmmaker could shoot film on a colored base to tint the highlights (as described in Chapter 23, "Vintage Film"), and then use one of a variety of toning processes to color the shadows, thereby achieving a dual-color image. Granted, this is not an effect you're necessarily going to use all the time, but it can be useful for stylized imagery.

Many filters are available for NLEs and compositing applications that create a duotone look; simply choose the two colors you want to use to tint the shadows and highlights. However, many color grading applications lack this easy solution; instead, you have to exert manual control to accomplish this effect. It's not at all difficult once you know how to set it up, so let's see how it's done.

CREATING DUOTONES USING COLOR BALANCING

The easiest way to create duotones is to simply create massive color imbalances using the Gain and Gain color balance controls. Swing the shadows toward one color and the highlights toward another color, and you've got yourself a duotone tint on top of a bit of leftover color (mostly within the midtones) from the original image (**Figure 7.1**, next page).

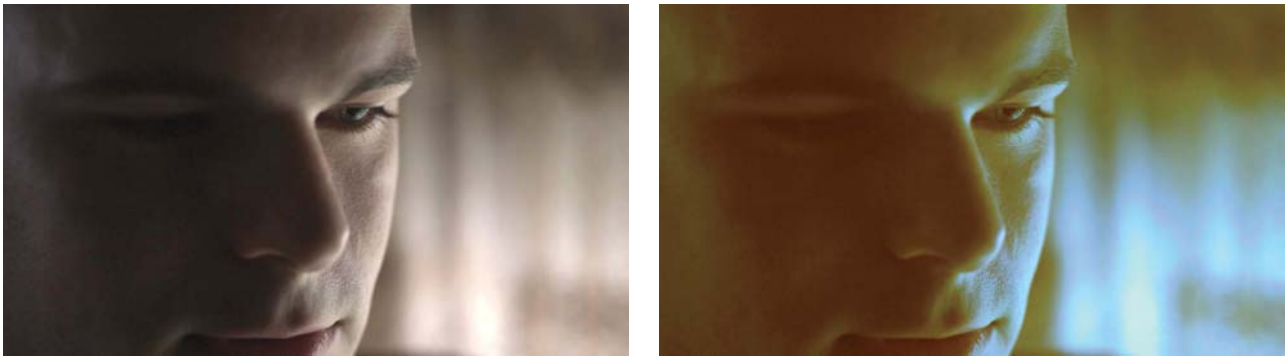

Figure 7.1 A duotone using shadow and highlight rebalancing to create a tint over the original color of the image

Another approach to this look can be accomplished by first desaturating the source image before rebalancing shadows and highlights. The result is a purer duotone effect that consists of only the two colors you're introducing, with no color interaction with hues from the original image (***Figure 7.2***).

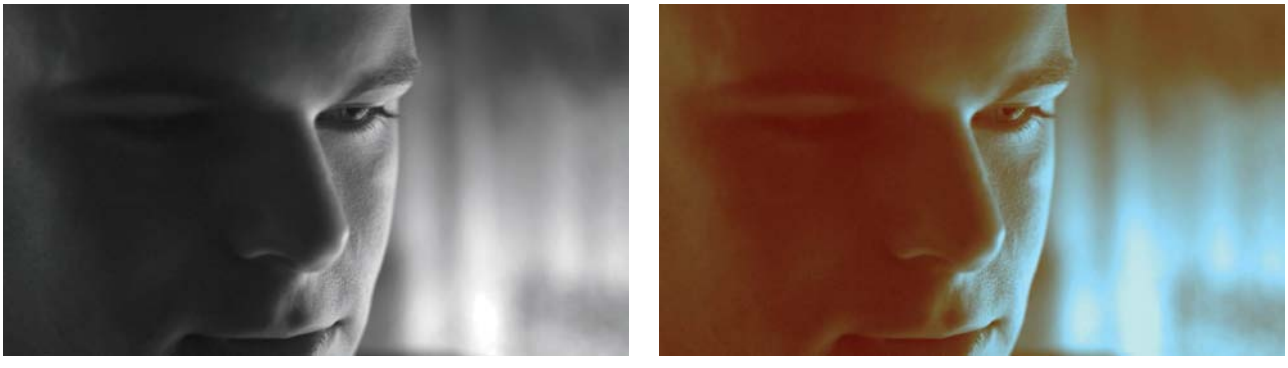

Figure 7.2 A different duotone look can be created by desaturating the image prior to tinting the shadows and highlights.

These techniques are highly dependent on the overlapping tonal regions that each color balance control affects. Different color correction applications use different overlapping regions, so you're bound to get varying results depending on your application.

CREATING TRITONES USING HSL QUALIFICATION

Another approach to this kind of selective tinting is to use HSL Qualification to define specific regions for tinting. You could do this for regular duotone looks if you're trying to limit one or the other color to specific regions, but perhaps a better way to achieve this look is by creating tritones, three overlapping tints variously affecting the shadows, midtones, and highlights of an image.

Figure 7.3 shows the setup in DaVinci Resolve's node-based correction interface, but the same idea can be accomplished via scaffolds in Assimilate Scratch or layers in FilmLight Baselight and Adobe SpeedGrade.

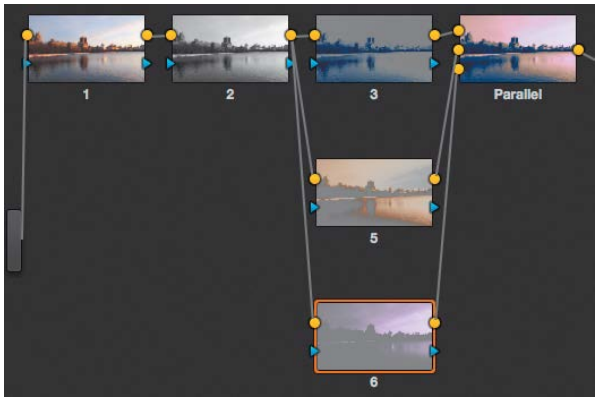

Figure 7.3 The node setup for the tritone example in this chapter, shown in DaVinci Resolve

The basic idea is that, after an initial grade for contrast (node 1), the image is desaturated (node 2), and then three parallel nodes create individual tints for the shadows, midtones, and highlights of the image (nodes 3, 5, and 6), which are recombined into the final grade using a Parallel node at the end of the tree.

Visually, **Figure 7.4** shows how each stage of the grade looks.

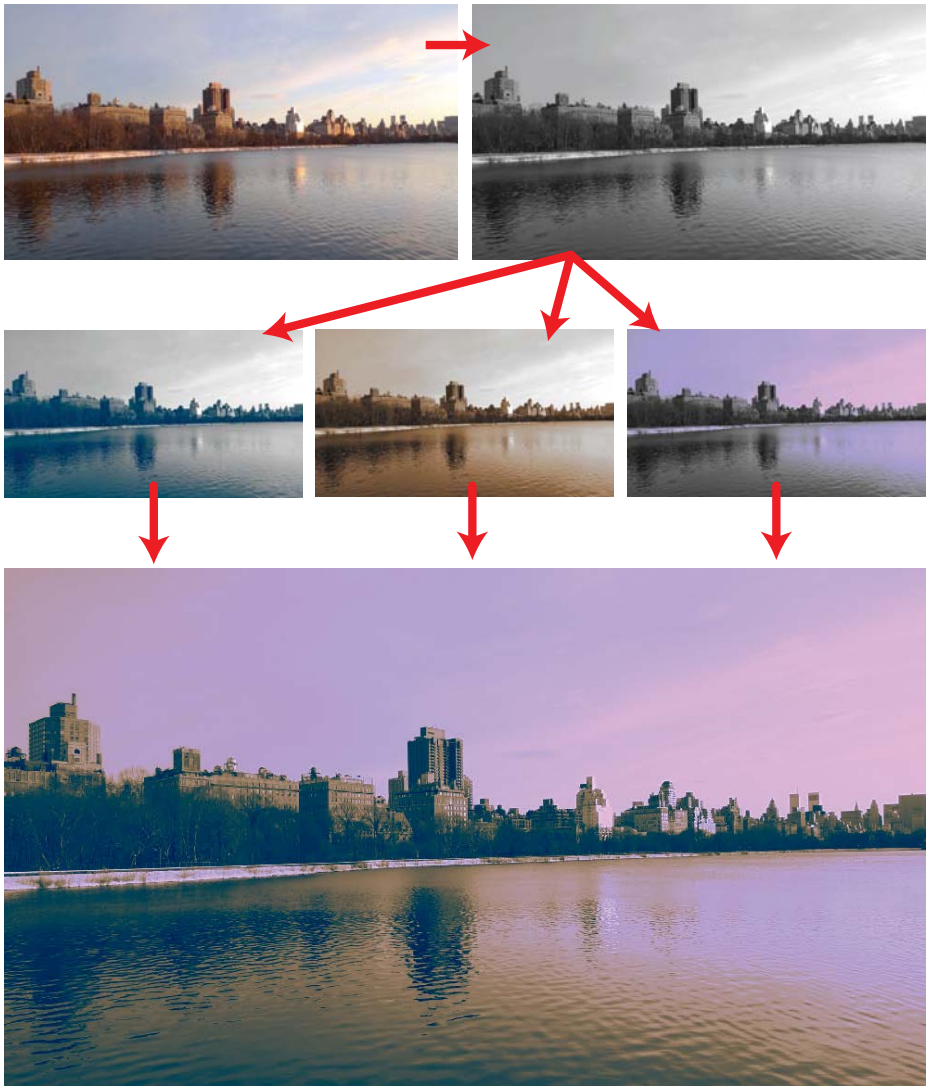

Figure 7.4 The six stages of an HSL key–segmented tritone grade

The goal with duotones and tritones is to create a harmonious blend of the tints you're using to fit the design goals of your project.

CHAPTER 8

EMULATING FILM STOCKS

Now that the use of motion-picture film is giving way to digital acquisition, many clients are beginning to express a desire to emulate the characteristics of film. There are a variety of ways you can do this, but before we continue, let's take a look at three images that were acquired on film and telecine'd to video neutrally for future grading (**Figure 8.1**).

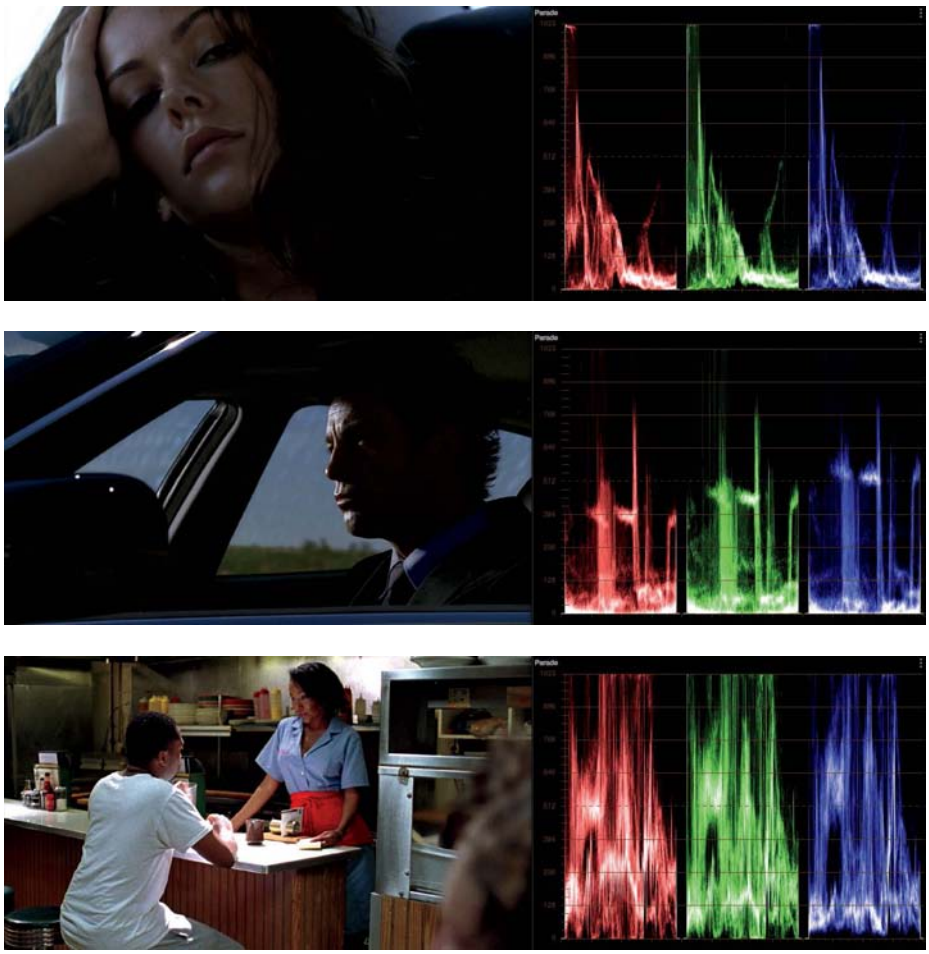

Figure 8.1 Three images that were actually shot on film

These three images are exposed very differently, using different stocks. However, even without the giveaway of a 24p frame rate, there are inherent characteristics that identify each image as "filmic": rich saturation found primarily in the mid-tones, a lack of over-saturation in the highlights, gentle roll-off of detail in the shadows, smooth tonal gradations from the shadows to the highlights of skin tone, and a warmth within the image that's perceptible even when there's an abundance of cool tones found throughout the frame.

These characteristics have been discussed elsewhere in this book and are all things you can emulate using more basic adjustments. However, for colorists wanting to more directly emulate the look of a film transfer and film exhibition when doing digital mastering, there's a more direct way to replicate the film experience.

PRINT EMULATION LUTS

Many of the LUTs being advertised for creative film emulation actually have their origins in the digital intermediate process as film print emulation LUTs. As described in Chapter 2 of *Color Correction Handbook*, the colorist who's working digitally but planning on printing to film needs to be able to see the effect that printing to the internegative stock will have and possibly also how *that* will look printed to the eventual positive "release print" stock. Over the years, many evolutions of negative stocks and release print stocks have been developed, with the result that it's long been necessary to mix and match different stock combinations based on the latest improvements, with a different LUT needed to represent each combination so that the colorist can know how the grade will look after being printed through two generations of stocks.

For example, SpeedGrade comes with a variety of "Filmstock" looks that are actually film print emulation LUTs derived from digital intermediate projects performed over the years. One such LUT is Fuji ETERNA 250D FUJI 3510 (by Adobe). This LUT is a sandwich of two stocks (now discontinued): a negative stock for film recording and a positive stock for creating the release print used to project the film at theaters. These stocks are described by FujiFilm as follows:

- Fuji ETERNA 250D "delivers ample sensitivity, super shadow quality and extremely natural facial tones. Facilitates telecine transfer and digital image processing."
- Fuji ETERNA CP 3510 is a "normal-contrast color release print stock [that] offers outstanding images with rich gradations and more lifelike colors. It provides natural skin tones, better shadow quality and detail, and more neutral blacks."

Additionally, depending on the vigor of the color science involved in your DI process, you may not need to merely emulate the film stocks; you may also have to take into account the film recorder used, as well as the entire system of exhibition, including the qualities lent an image by the way different bulbs pass light through the film and lens of the cinema projector.

Richard Kirk at FilmLight described the development of Truelight, a system for translating images from video, film, and computer graphics, and translating them with accurate color to any other display system, including film recording. In addition to the combinations of negative and positive stocks, Kirk explained, characteristics of the projector were also included in the calibration process, which included the spectral characteristics of the projector bulb, light loss due to lens optics, light scattering due to print stocks (due to the Callier effect), and the screen material. In short, there's a lot that can go into accurate print emulation.

What makes this relevant to the digital colorist is that, in mixed-deliverable workflows where one needs to generate a film print for theatrical exhibition as well as a BT.709 grade, often the theatrical grade is done first using appropriate print emulation LUT for the workflow at hand, and that LUT is then "baked" into the BT.709 deliverable, usually after a trim pass to make whatever additional adjustments are necessary to ensure that the program looks as it should in a living-room environment.

In theory, the print emulation LUT should be invisible, since the colorist is using the LUT to represent the character of the ultimate display and the objective is to grade the image to correct for any foibles introduced by the film recording process. In fact, the exhibition medium influences the grade, so even though the digital intermediate colorist's goal is not explicitly to "make the program look like film," filmic characteristics come with the territory.

USING LUTS TO EMULATE FILM

With all of this in mind, one way you can add "filmic" characteristics to a grade is to apply a print emulation LUT, thereby putting yourself in the same position as the digital intermediate colorist but for strictly aesthetic reasons. Dave Hussey, senior colorist at Company 3, observed in conversation that when the ARRI Alexa digital cinema camera started finding wide use in television, everyone's projects started looking the same; the variances that once resulted from different cinematographers favoring different film stocks from a variety of manufacturers (Kodak, FujiFilm, Agfa) were no longer there.

In Hussey's opinion, the process of applying a film LUT pushes the look of the image into a different and more interesting space, and the very process of building your own grade on top of this very different starting point is guaranteed to stimulate a different and unique visual approach.

However, when you apply a film emulation LUT, what exactly is the ineffable character that is being lent to the image? Let's take a look.

Whenever you're curious about just what a particular color or contrast preset or LUT is doing to an image, apply it to a linear ramp, and you'll be able to immediately tell. **Figure 8.2** shows three examples of applying an emulation LUT to a ramp.

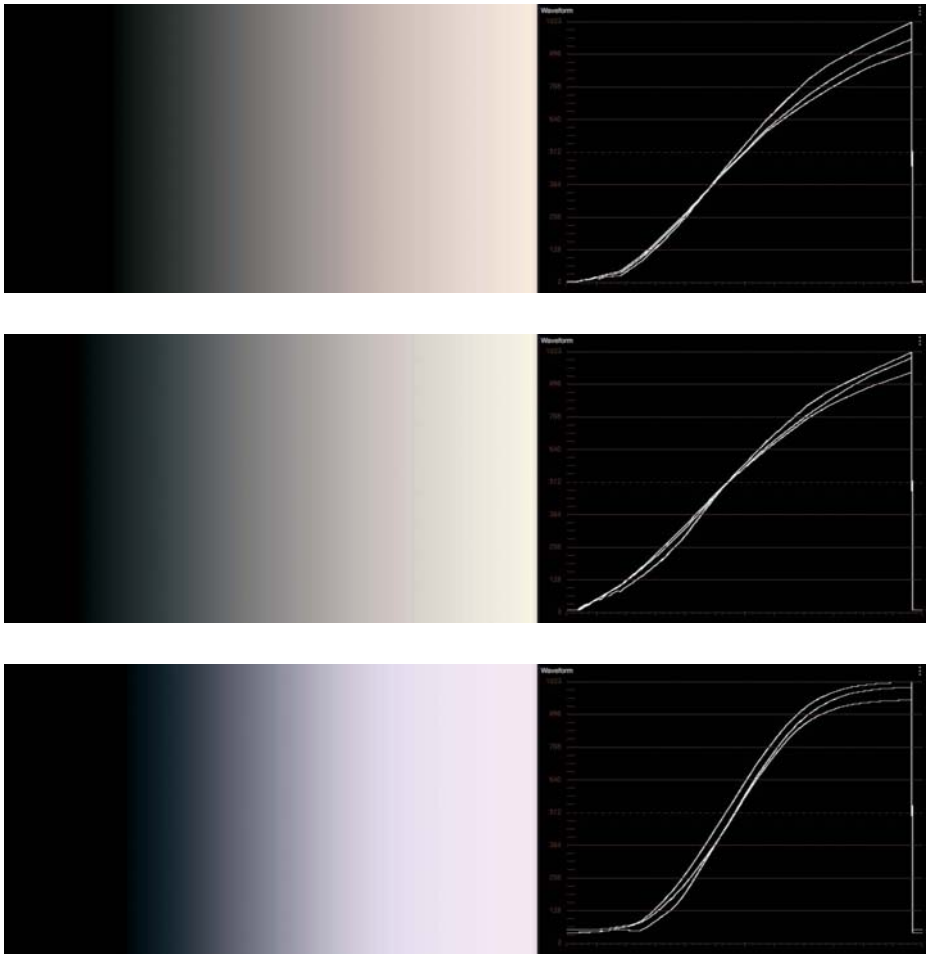

Figure 8.2 Three examples of applying a film emulation LUT to a test ramp pattern (on the left in each image), side by side with an RGB overlay analysis of the altered signal

The ramp itself clearly shows how the LUT is altering the contrast of the image, corresponding to the telltale S curve seen in the RGB Overlay scope. However, you should also be able to see a clear nonlinear color response, with differing color imbalances in the highlights and the shadows. These appear visually as tints on the ramp but are even more clearly indicated by the divergence of the three color channels in the highlights and in the lighter shadows.

This nonlinear color response results from the cross-coupling between the three emulsion layers of each of the two film stocks being emulated. Uncorrected, this cross-coupling could be seen as adding an interesting look to the image, but the signature feature of this stylization, if you choose to look at it as such, is a boost in contrast and a nonlinear alteration of color in the highlights and shadows.

The accurate and pleasing representation of skin tones has long been a preoccupation of film stock manufacturers, from the first days of color film. You should notice that the majority of film stock emulation LUTs tend to have good channel alignment somewhere within the midtones. Anywhere you see this kind of alignment in the video scopes, that's a section of tonality that's relatively neutral, and since the midtones are where most skin tone will be exposed, it makes sense that this is where many stocks try to be as neutral as possible.

Let's take a look at the purely creative application of this. Gabe Cheifetz, of plug-in maker Koji, showed me a prerelease version of a new film emulation LUT package it has been developing. I'd been talking with folks at Koji about this project over several months, discussing their objective to preserve the quality of film for use in emulation before all the film stocks become unavailable. This first LUT (available with the downloadable content that accompanies this book) is designed to emulate Kodak 2383. But I'll let him explain in his own words.

This 2383 print LUT provides the characteristic curve of film—or, more accurately, a specific film print stock as developed by a specific lab on a specific day. It should be applied to a Cineon log clip, and it will output in Rec. 709 format. It's a starting point for a grade, not a finished look. By applying your own creative grade upstream of the LUT, you can influence the result while staying within the limits of the film stock's response curve. It's a powerful tool that can yield beautiful results with a little practice.

For comparison, let's look at how the Koji 2383 LUT compares to an ARRI normalizing LUT when applied to a REDLog Film-encoded clip (**Figure 8.3**).

Figure 8.3 A normalizing LUT compared to a film emulation LUT that both normalizes the image and applies a film look based on Kodak Vision 2383 print stock.

Clearly, the normalizing LUT produces a more neutral result, while the Koji LUT adds much more character out of the gate. Cheifetz makes an important point that film emulation LUTs should be considered the *starting point* for the grade and not the whole grade.

Keep in mind that the mathematics of LUTs are such that any image data that falls outside of the range the LUT was designed to handle will be clipped. As I wrote in the DaVinci Resolve user manual:

For processor efficiency, 3D LUTs are designed with reasonable lower and upper limits for the data they will handle. It's well known that when a 3D LUT is fed values that are outside of the range that LUT is designed to handle, the out-of-range data will be clipped. Since many LUTs are designed with digital cinema workflows in mind, the practical result is that feeding a video signal with super-white in it to a 3D LUT that's designed for full-range data (0–1) will clip the super-white part of the signal.

NOTE

DaVinci Resolve users will want to note that LUT operations are the very last operation performed within any node. For this reason, LUTs added within a node affect the end result of any other operations used within that node, which helps you to control your order of operations as you create your grade.

It is for precisely this reason that I like to add a look LUT as the middle operation in a multilayered grade. That way, I can make adjustments to the pre-LUT state of the image if necessary to bring image data back from being clipped or to access the original range of data before a vigorous LUT compresses it beyond the point of easy retrieval. Then, more adjustments added to the post-LUT state of the image let you continue to manipulate the result, in this case adding a whiff of color contrast back to the midtones, as shown in **Figure 8.4**.

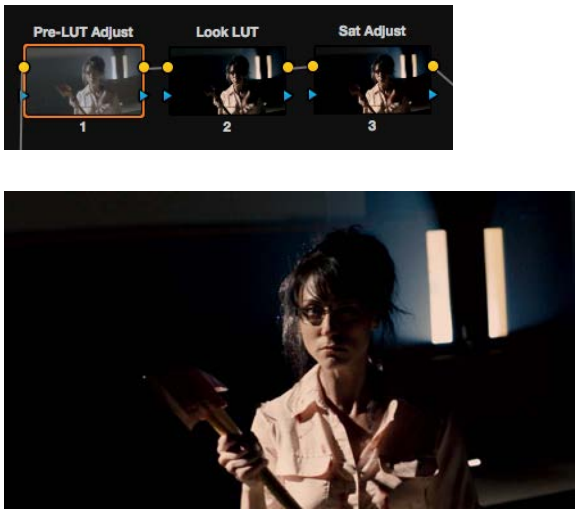

Figure 8.4 A three-node sequence of operations to manipulate the image before and after the look LUT, shown with the final graded result

Here's one last suggestion. Oftentimes, you may find you want to split the difference between a look LUT's application and the original state of the image. Most grading applications have the facility to fade, dissolve, or otherwise increase the opacity of individual operations. DaVinci Resolve has the Output Gain control in the Key palette, and Adobe SpeedGrade has an Opacity slider that lets you adjust how much of each layer is mixed into the final result. Filmlight BaseLight has a Result Blending slider that can be used to mix any other layer with the current one. Other applications have similar mechanisms.

If you want to introduce film emulation LUTs or plug-ins to your workflow, here are some resources to investigate:

- Adobe SpeedGrade has a selection of "Filmstock" looks that are available either from the Look Browser or from the LUT look layer.
- DaVinci Resolve has a selection of film LUTs available in a "Film Looks" category of the 3D LUT submenu that's located within each node's contextual menu in the node editor.
- Baselight has a set of "Baselight Looks" that's available to users of the full workstation.
- SpeedLooks (www.looklabs.net) has a collection of basic and customized LUT looks formatted for Adobe SpeedGrade and DaVinci Resolve. Additionally, the SpeedLooks package has a set of data conversion LUTs that you can use to convert various camera formats to Log C, thereby making it easier to match cameras and easier to apply these looks.
- Koji Color (www.kojicolor.com) provides a collection of carefully scanned film emulation LUTs formatted for Resolve, SpeedGrade, Smoke, Flame, Scratch, and Baselight. One of the LUTs from this package is included with the downloadable media for this book.

NOTE

There are also a wide variety of filters available for applying film emulation looks. GenArts' Sapphire (www.genarts.com/effects/sapphire) has the S_FilmEffect filter that lets you mix and match among different Kodak Negative and Print film stocks, and FilmConvert (www.filmconvert.com) is a plug-in available for After Effects, DaVinci Resolve, and many other NLEs. Curious Turtle's Film Wash (www.curiousturtle.com) is a set of saved film emulation grades available for After Effects and DaVinci Resolve.

APPLYING LUTS IN DIFFERENT APPLICATIONS

Here are three examples of how to apply LUTs to a grade in three widely available grading applications:

- **DaVinci Resolve**: You can add a Resolve-formatted .cube LUT to any node in the node tree (**Figure 8.5**). 3D LUTs that are assigned to a node act as the last image processing operation within that node, so you can add a LUT to a node (such as one of the Film Looks), and still use the grading controls within that node to process the pre-LUT transformed image data.

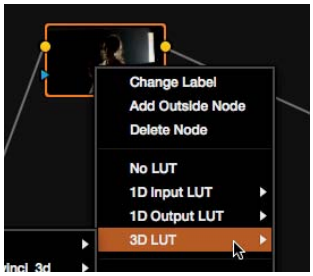

Figure 8.5 Applying a LUT to a node within a grade in DaVinci Resolve

- **Adobe SpeedGrade**: You can add the LUT custom look layer to the Layers list in order to insert a LUT operation (**Figure 8.6**), with which you can apply one of the pre-installed LUTs (such as the Filmstock looks), or you can load a LUT from disk.

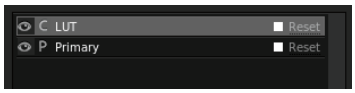

Figure 8.6 Applying a LUT as a layer within a grade in Adobe SpeedGrade

- **FilmLight Baselight**: Any layer in Baselight can be set to work as a "Truelight" operator, enabling you to apply a LUT transform to the image using any Filmlight-formatted LUT at that layer, such as the Baselight Looks (**Figure 8.7**).

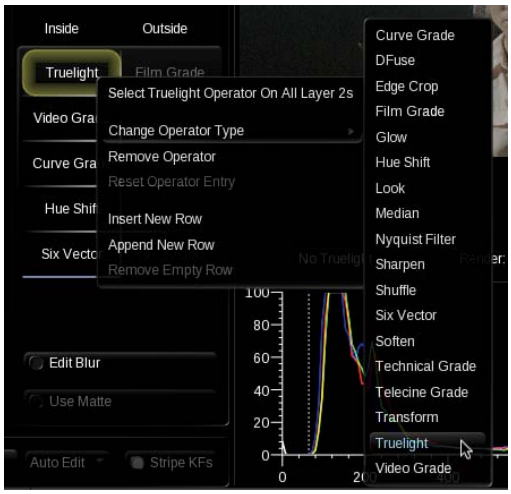

Figure 8.7 Applying a LUT by assigning a Truelight operator within a layer in FilmLight Baselight

Bearing in mind that most professional grading applications provide a method of applying multiple operations one after another, you'll find it useful to organize your image processing operations in order to make adjustments both before and after the LUT. You make adjustments before the LUT to access the pre log-encoded image data; adjustments made afterwards enable you to work with the image data the LUT outputs.

FAKING FILM EMULATION

Philosophically speaking, as a colorist I dislike the notion of having a client tell me, "Use this film LUT, customize it a bit, and we're good." Granted, if that's what they want, far be it for me to rain on their parade. But the snob in me always wants to know if there is anything I could do to manually re-create this kind of look in such a way as to customize the "ineffable quality of film" and make it my own. Would it be possible, in fact, to create my own stock and have it appear, to all the world, as a legitimately "filmic" look?

To this end, I tried an experiment.

Applying a film emulation LUT to a ramp test signal as described in the previous sections, I switched to the RGB Parade Scope representation of the red, green, and blue (RGB) channels and was struck by the suspicious similarity between the shape of the RGB waveforms and the shape of the curve-based cross-processing looks shown earlier in this chapter (**Figure 8.8**).

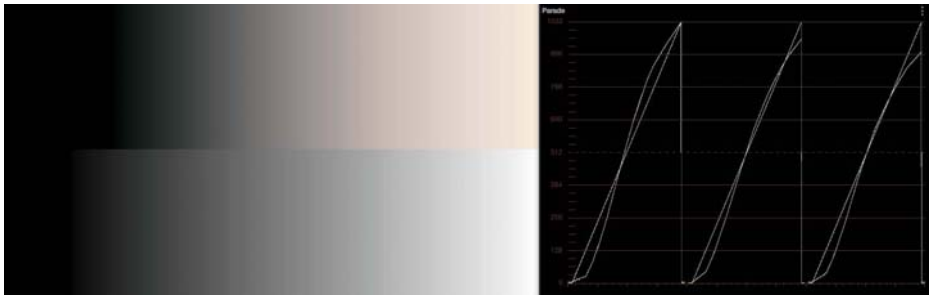

Figure 8.8 Split-screen grayscale ramp (left) with a film LUT applied to the top half and the original linear ramp displayed within the bottom half, next to an RGB Parade Scope analysis of the image (right). Note how each color channel of the ramp as affected by the LUT is an individual S curve of varying intensity.

This makes sense, since the cross-processing look is emulating the wildly nonlinear color-channel response that results from using the wrong chemicals to develop a particular film stock. The truth is, the original reason for the color curves interface is to be able to manipulate film in a method analogous to the density curves used to represent each color channel's response through the tonal range. These curves were originally designed to help correct for problematic film exposures during the telecine process, but now they serve as fantastic tools for filmic adjustments.

You've already seen the pseudocinematic effect that a simple S curve applied to the luma of the image can have. By split-screening a saved still of the grayscale ramp with the film LUT applied against a clean linear ramp, I used the custom curves in DaVinci Resolve (with Lum Mix off in order to completely decouple the curves' relationship with one another) to manipulate the clean ramp to "trace" the LUT analysis still (**Figure 8.9**).

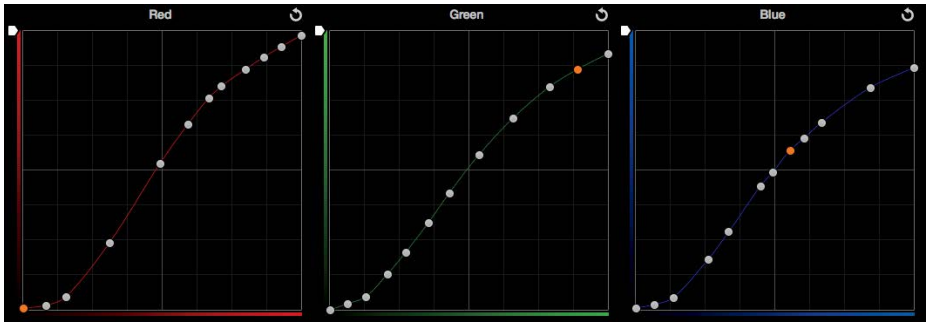

Figure 8.9 The custom curves adjustment used to match the clean ramp with the LUT analysis

The result was imperfect, but to the naked eye the top and bottom of the ramp split-screen appear to match (**Figure 8.10**).

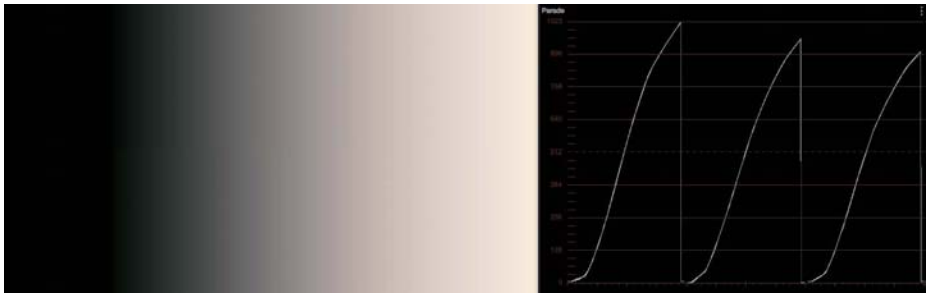

Figure 8.10 The manual match made between the LUT and curve adjustments

The final test was to compare, using an actual image, how my manual curve adjustment compared to the LUT from which it was derived (**Figure 8.11**).

Figure 8.11 A split-screen showing the image as affected by the LUT (top) and the image as affected by my manual curves adjustment (bottom). The seam between the two halves passes over the tip of the woman's nose.

Interestingly, while there are subtle, but clear, differences in luminance between the two images, a single 0.01 boost to the Gamma contrast control achieved a near-perfect visual match between the curve adjustment and the LUT. In short, it's entirely possible to bake your own cinematic looks.

For fun, I copied the red curve to the green channel, then copied the blue curve to the red channel, and finally redrew the blue curve to be stronger in the highlights in order to create a fake stock with exaggerated green in the highlights (**Figure 8.12**).

Figure 8.12 A fake film stock created by customizing color curves to alter which channel is strongest in the highlights, while maintaining individual "s" profiles for each curve

The result, while odd, retains the nonlinear color balance that implies a filmic look. There are two lessons to be learned from this.

First, you don't have to go through this whole rigmarole in order to create custom cinema looks. You can, in fact, load a LUT and use fewer points on the custom curves to manipulate the subtle color balance of the highlights and shadows in order to change the character that LUT is giving the image. As you do this, keep in mind the need to maintain good midtone color balance in order to preserve some relative neutrality in the all-important skin tones.

Second, the use of hand-sculpted curves to generate imaginary stock looks, with a little advance preparation, patience, and elbow grease, can be a fertile ground for your imagination. Precision is not what's important; you're going for a creative look. Have fun.

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CHAPTER 9

FILM LOOKS OTHER THAN GRADING

There has been much discussion over the years about how one might go about altering digital media to give the illusion that it was shot on film. Grading aside, there are many elements that go into turning film productions into works of art, and asking you, the colorist, to re-create these elements for any old piece of video without any preplanning can be a time-consuming proposition.

While adjustments to color, contrast, and texture go a long way toward creating a filmic look, there are other cinematic signifiers that are equally noticeable to the audience. This chapter describes many of these additional signifiers, providing recommendations for approaching their alteration, where necessary.

FRAME RATE AND SHUTTER SPEED

Since all digital cinema cameras and many consumer video cameras are capable of 24 or 23.98 fps acquisition, this isn't as much of an issue as it was when video-based low-budget filmmakers had to make do with 29.97 fps equipment, downconverting it in various tricky ways to 24 fps. These days, if you want to shoot using this cinema frame rate, simply choose one of the many cameras that use it. However, for movie-theater documentary work that mixes old formats and new, it's worth noting that audiences have built a longstanding association with 24 fps being what's shown in movie theaters and 25 (50i) and 29.97 (60i) fps being what you see in sports, TV news, and soap operas.

Of course, the 24 fps advantage is not simply one of look. Logistically speaking, mastering to a 24 fps frame rate is extremely convenient for a variety of reasons.

- It makes the creation of a film print from your digital project easier (for however much longer that will be necessary).
- A 24 fps frame rate makes for less data to stream than 60i for online distribution.
- DVDs and Blu-Ray Discs may be authored with 24 fps media to maximize image quality by spending disc bandwidth on better-looking frames rather than more of them.

- It's easy to add 3:2 pull-down to 24 and 23.98 fps if you need to produce a 29.97 (60i) fps master for broadcast.
- It's easier to make a PAL conversion by simply speeding the frame rate from 24 to 25 fps (and adjusting the audio to compensate).

Logistics aside, it's undeniable that 24 fps frame rates have a palpable look that is associated with the cinema experience. Still, I consider it a great irony that film's slower frame rate of 24 frames per second (chosen once upon a time to save money on film stock) is considered creatively superior to video's faster frame rates of 29.97 fps (60i) and 25 fps (50i), which exhibit fewer motion artifacts.

Another phenomenon that goes hand-in-hand with the look of film is the shutter speed with which each frame is exposed. To summarize, fast shutter speeds result in less motion blur recorded in each frame, which produces "strobing" in the motion of 24 fps video. This can be useful if your objective is to create the impression of frenetic motion or if you're planning on postprocessing a shot to create artificial slow motion, but these applications are special effects. Slower shutter speeds that are around double the frame rate (1/50th of a second) introduce a bit of motion blur that results in what audiences consider to be a naturalistic "cinema" look.

Why mention any of this in a book about color correction? Well, if you're working with clips recorded with a shutter speed that's too high, some grading applications and NLEs have either built-in features for introducing motion blur or access to plug-ins capable of doing this. **Figure 9.1** shows before and after versions of an image with additional motion blur applied as part of the grade.

Figure 9.1 An image before and after artificial motion blur has been added

If you find yourself in the middle of a documentary grade show using a Canon 5D and the client complains that the motion looks too stuttery, DaVinci Resolve has artificial motion blur creation built into the app (**Figure 9.2**).

There are also third-party plug-ins available for compositing applications and NLEs that let you add motion blur whenever necessary. Here are two that are in wide use:

- ReelSmart Motion Blur (www.revisionfx.com)
- MotionBlur (www.thefoundry.co.uk)

ALTERNATIVES TO 24P

If you've ever wondered about the "juddering" effect you get in some clips with fast pans, this is a partial result of trying to represent one second of smooth motion with only 24 frames. Generations of audiences have learned to overlook these motion artifacts, and it's never stopped a filmmaker from moving the camera any which way to create more sophisticated blocking, but that doesn't mean the problems aren't there. Artifacts aside, it's undeniable that video shot at 24 fps looks that much more cinematic than at any other frame rate, thanks to the ingrained preferences today's audiences have developed over a lifetime of watching 24 fps movies in darkened theaters.

However, new research from the BBC Research & Development group into high frame rate (HFR) exhibition formats is paving the way for filmmakers to explore alternatives for future projects. While Peter Jackson's *The Hobbit*, which was shot and screened at 48 fps, has been mildly controversial, I'm more convinced by demonstrations I've seen from the BBC showing 120p frame rates. Research by the NHK appears to show that, above 100 fps (progressive), our eyes "fuse" the motion of progressive frames such that strobing and the perception of "sped-up motion" vanish, even with short shutter openings. Having seen 120 fps playback for myself, I can say that it's impressive, and it yields a type of motion for exhibition that defies current viewer expectations. It doesn't look like contemporary cinema, but it doesn't look like the TV news, either. 120 fps is already part of the "Ultra HD" recommended standard but, according to the BBC, a frame rate that's a multiple of three will be required for European countries due to lighting flicker and standards conversion issues, and this has not yet been defined as of this writing.

The jury is out on whether narrative filmmakers will embrace the ability to shoot and exhibit HFR media, but I have a hard time believing that, 100 years from now, everyone will be shooting and watching 24 fps video the way it's always been done. Personally, I like the fact that upcoming generations of digital cinema projectors will be able to exhibit at a variety of frame rates, which means that filmmakers will be able to choose a frame rate that suits their creative goals in the same way they choose an aspect ratio or style of color grade.

Figure 9.2 Motion blur controls found in the Motion palette of DaVinci Resolve

INTERLACED VS. PROGRESSIVE

While interlacing is commonly associated with the television frame rates of 25 (50i) and 29.97 (60i) fps, it's worth making a distinction between 50i and 50p and between 60i and 60p, especially 60p as it's a contender for HFR exhibition.

In my experience of shooting a narrative feature at 29.97 fps interlaced and digitally converting it to 29.97p—an admittedly odd (but screenable) frame rate—I've observed on behalf of both myself and audiences a clear difference in perception between the interlaced and progressive versions of the project, even at the same

frame rate, leading me to conclude that interlacing as a perceptible quality of a format is indeed separate from the actual frame rate (**Figure 9.3**).

Figure 9.3 An example from a graded standard-definition film, before and after deinterlacing (*Four Weeks, Four Hours*, directed by me, 2006)

NOTE

While your grading application may or may not have the ability to deinterlace media, don't forget that as long as your grading app is able to conform clips using multiple frame rates and render each clip to its own frame rate on output, you can round-trip back to an NLE that has either deinterlacing features or access to plug-ins that do, so you probably won't have to worry about it.

In short, while there may be quibbles with just what the future holds for frame rates, cinema is not, has never been, and will never be interlaced. If you need to deinterlace clips after the fact—for example to incorporate interlaced archival material into a documentary that's being mastered to a progressive frame rate—there are a wide variety of software plug-ins (too numerous to mention here) that can do the job. Furthermore, if you have a lot of material to deinterlace, hardware such as Blackmagic Design's Teranex and Snell's Alchemist outboard video processing boxes do an even higher-quality job, in real time.

DEPTH OF FIELD

Varied depth of field is perhaps one of the most visible hallmarks of cinematic filmmaking and again is something most effectively handled during the shoot. The wide availability of large-format sensors in digital cinema cameras makes depth-of-field control available to the digital and low-budget filmmaker.

Managing varying depth of field when exposing film is a fact of life for cinematographers, and it's a creative tool that, in skilled hands, allows the cinematographer to precisely control the viewer's focus, either creating soft, painterly backgrounds

that lend contrast to foreground subjects or setting the stage for deeper-focus shots that allow the viewer to take all of the details within an expansive scene. The point of using a large-format sensor is not that you should make every single shot a shallow depth of field shot. Rather, the important thing is that you can control the depth of field, making it as shallow or as deep as the scene requires.

Years ago, I graded the feature *Souvenir* for Los Angeles filmmaker Natasa Prosenc Stearns. The film's director of photography, Joseph Rubinstein, used an experimental handmade lens rig that, while intended primarily to narrow the depth of field to create shallow focus, also introduced glass texture and altered the color in really interesting ways that lent themselves to lush, saturated grades (**Figure 9.4**). To this day *Souvenir* remains one of the more visually interesting projects I've worked on.

Figure 9.4 A still from Natasa Prosenc Stearns' *Souvenir*, (2006)

If the shallow depth of field desired by your client was not obtained during the shoot, you can certainly add some quick-and-dirty background defocus using a window to limit a Gaussian blur effect to specific areas of the frame, but this can be an imprecise effect. With more careful rotoscoping, digital mask painting, and application of lens-defocusing filters that attempt to simulate the *bokeh*, or shape of defocusing that results from light actually passing through an aperture (which is significantly different from ordinary Gaussian blur), you can create more plausible depth-of-field looks, if such features are available (**Figure 9.5**).

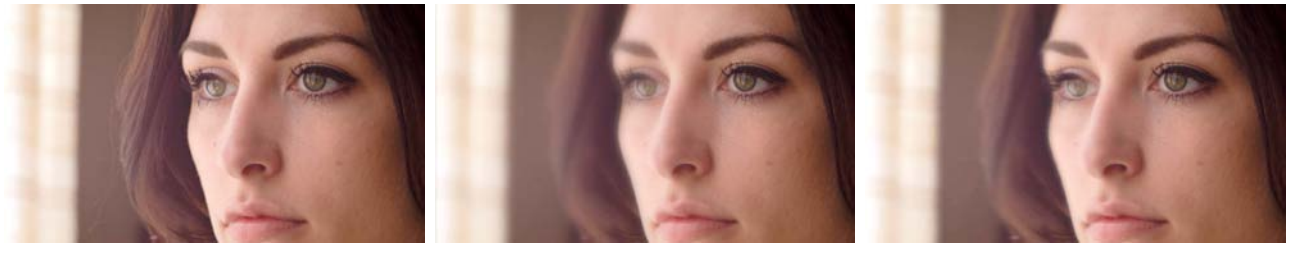

Figure 9.5 The original image (left) with a windowed Gaussian blur (center) and a windowed lens defocus (right)

If you're going to do this, keep in mind a multilayered approach, where you use several overlapping and specifically shaped windows to apply distance-specific levels of blur. I used this technique for the cover of this book, employing multiple windows with varying amounts of blur to create an illusion of shallow focus (**Figure 9.6**).

Figure 9.6 The image from the cover of this book, which I graded to create the illusion of shallow depth of field via three window-limited blur operations of varying strength

This can be a lot of work, but sometimes one or two appropriately defocused angles of coverage will go a long way, so it's worth experimenting to see what you can get away with. Just be sure you know what you're getting into, schedule-wise.

NOTE

GenArts' S_RackDefocus and S_DefocusPrism are more optically accurate lens blurs that attempt to simulate the kind of bokeh, lens noise, and shape of an out-of-focus lens.

CHAPTER 10

FLAT LOOKS AND FILM FLASHING

I don't want to imitate life in movies; I want to represent it. And in that representation, you use the colors you feel, and sometimes they are fake colors. But always it's to show one emotion.

—Pedro Almodovar

Film flashing can be thought of as a rationale for looks involving a *reduction*, rather than an expansion, of image contrast. In the years since, a grading style referred to as the "flat look" has begun to make the jump from commercial spots in London to short-form and series work around the world; the first season of the HBO series *Girls* (colorist: Sam Daley) was notable for the use of a muted, lower-contrast look that serves as a good example of this sort of stylization. However, before delving into the digital techniques behind this look, a history lesson is in order.

FILM FLASHING

A common joke is that the flat look stems from uncorrected log-encoded media that a director has gotten used to. In fact, colorist Dave Hussey (Company 3) related anecdotes of actual clients who, having spent so much time in the edit working with uncorrected log-encoded clips, found it difficult to let go of the footage having a low-contrast look (a phenomenon he called "temp love"), so there's definitely truth to this.

However, while discussing the flat look over beer and dumplings with colorist Giles Livesey, Giles surmised that the origins of lower-contrast imagery also stem from lower-contrast filmic treatments, as their use in the commercial arena predate the common use of log-encoded media.

One of the filmic techniques I suspect is being subconsciously referenced is *flashing*, which refers to a process of preexposing film to a low level of light (7–25 percent, depending on your goals) in order to photochemically decrease the contrast of the photographed image. If we consider Dmin to be the lowest possible black that can be photographed by film, flashing adds a "base fog" to this Dmin value, raising the level of photographed blacks and shadows.

The practical result of low levels of flashing is to improve captured shadow detail in low-light situations. Higher levels of flashing result in lifting the black point of the photographed image, reducing contrast in situations where dense blacks are not wanted.

Although flashing used to be accomplished by the lab, in recent years flashing has been accomplished using camera accessories such as the ARRI Varicon (a device that illuminates glass filters in front of the lens) and the Panavision Panaflasher (another device that illuminates the negative as it moves from the magazine to the camera body). On Cinematography.com, DP David Mullen describes using the Panaflasher on the movie *Northfork*. He also mentions Freddie Francis using the Lightflex on *Dune*, *Glory*, and *The Straight Story*, and that the movies *The Hunt for Red October* and *The 13th Warrior* used light amounts of flashing.

NOTE

Another method used to reduce contrast was pull processing, a method of under-processing film (by no more than one stop, as recommended by Kodak) in order to salvage an overexposed roll, which has the added effect of reducing image contrast.

I mention the technique of film flashing mainly to point out that, although today's digital era of easily expanded contrast and crushed blacks makes high-contrast looks popular and easy to create, cinematographers have also spent years exerting careful control over the *reduction* of contrast.

In the following example, the same image is shown with the bottommost blacks parked at 0 percent/IRE (**Figure 10.1**, top) and raised to around 9–12 percent/IRE (Figure 10.1, bottom).

The higher-contrast treatment has very dense blacks indeed. Even though we're not crushing detail out of the shadows, we're making the darkest parts of the image very dark, and the result is a more menacing tone within the scene.

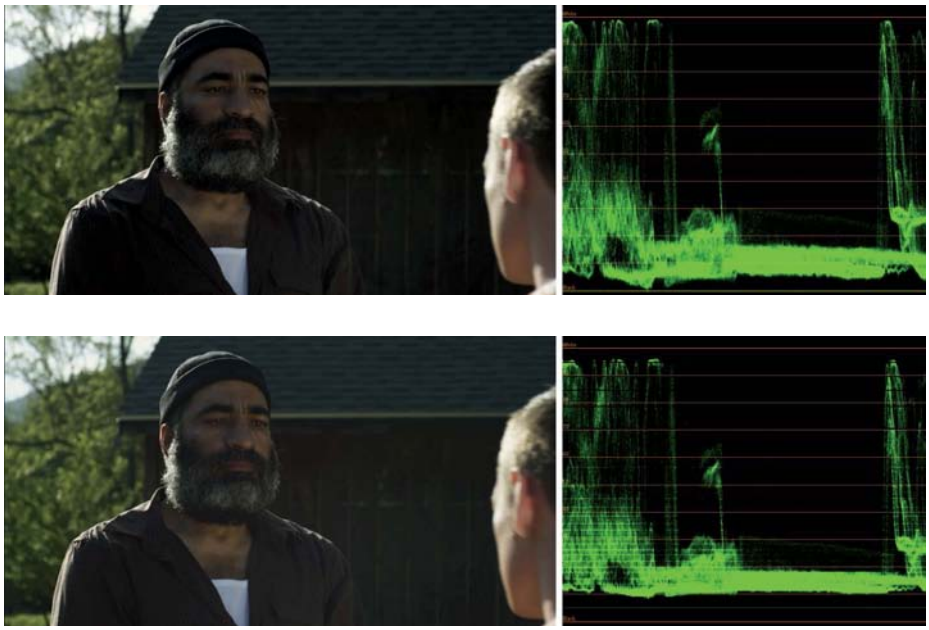

Figure 10.1 Two shadow treatments, compared. Lower blacks (top) vs. lighter blacks (bottom).

Elevating the black point, as shown in the bottom example, "opens up" the shadows, providing additional visibility of fine shadow detail and making the darkest shadows seem like not so much of a black hole, giving the scene a gentler demeanor. It's a small difference but a meaningful one. The overall tonality of the image dictates what kind of contrast treatment looks best, but if all things are equal, this is an additional visual cue you can employ to alter audience perception of the scene.

BUILDING FLAT LOOKS

Dave Hussey made another salient point, that flat looks aren't a particular style so much as they're a philosophy of grading, where you're attempting to provide the illusion of "ungraded" material that can be perceived as more authentic and unassuming, even though in fact you're grading the heck out of it. This is a great way of looking at the task at hand.

Whether you want to preserve shadow detail or simply because you desire a softer look, you can use the same principles employed by film flashing to elevate the black level of the picture and create a flat look. However, when building a well-constructed flat look, it's important to not simply reduce contrast but to exert selective control over where contrast and saturation are exhibited within the image. Consider the following tips when creating a flat look:

- Raise the black point of the image, either by raising the Lift or Offset contrast control while simultaneously lowering the Gamma or Midtone contrast control or by using the toe of the Luma or RGB Curves control, placing a control point to lock down the portion of the image you want to leave alone and then dragging the bottommost control point of the luma curve up to raise the black point. How much you need to lift the black point depends on the content of the image, but the idea is to eliminate solid blacks in order to provide a softer feel. Images with a lot of black may need to be raised by only 3–5 percent, while images lacking solid shadows may benefit from being raised by as much as 10–15 percent, but these are just suggestions. There's no formula to raising the black point; it's about what looks right.
- Mute the highlights slightly. Curves are ideal for this operation, mainly to compress and "roll off" any exceptional highlights (sparkly bits) in order to further soften the image and mute, but not eliminate, image contrast. This will likely be an even slighter adjustment than the one you made to the black point, perhaps only a few percent lower in an image with very bright highlights or more in a darker image with no natural highlights.
- Boost midtone contrast. Just because the flat look is about reducing contrast doesn't mean you should create an image with *no* contrast. The idea is to build contrast within a narrower zone of image tonality. You can do this in two ways: either by dropping the midtones in order to stretch the difference between the midtone levels and highlights of the image (making up for the boosted black

point) or by adding two control points to the midtones of the Luma or RGB curves in order to stretch midtone contrast that way, while leaving the shadows and highlights at their muted state.

- Control saturation. In fact, when you compare the camera original and graded versions of the image when using this sort of grading strategy, the contrast is often not that different, or possibly a bit higher, assuming the original image was shot low contrast in anticipation of creating this look. One approach is to make a significant reduction in saturation. Again, you're not eliminating saturation, just reducing it to the point where the color is clearly present but not overly vibrant. This is also a good time to use the Hue vs. Saturation curve to focus image saturation on the main subject of the shot, desaturating less important areas.
- Another way of controlling saturation is to boost it in unexpected ways. Dave Hussey shared a "flat" look which he employed for the Solange music video of "Losing You" involved reducing image contrast while *raising* saturation. When done carefully, this approach gives the image a soft pastel sort of look. One thing to note with this strategy is that the source media had a lot of colorful elements that played into this approach really nicely.
- Lastly, Giles Livesley suggests adding a soft vignetting window or shape around the edge of the frame, not to darken the edges but to lower the lift or black point a bit in order to sneak just a touch of contrast back into the image—not so much that you notice it's there while looking at the image but just enough to put a bit of density into a small region of the shadows.

These principles will be put into action in slightly different ways on a pair of images. In the first (**Figure 10.2**), a living-room scene in a music video will be given the flat look in three steps.

Figure 10.2 The camera original image

While in practice these steps interact with one another such that you'll make these adjustments all at once, for clarity's sake I'll present each step individually.

The original image was shot with gentle contrast to begin with, but the lighting of the room is warm, and there's fill that softens all the shadows. First, an adjustment to Lift, Gamma, and Gain will raise the black point while keeping the midtones

more or less where they are (**Figure 10.3**). Additional Gamma and Gain color-balance adjustments neutralize some of the excessive warmth in this image, reducing colorfulness while preserving saturation in the actors' skin tones.

Figure 10.3 The image after the first adjustment, to flatten contrast and reduce saturation

Next, in an additional operation, the curves are used to stretch contrast in the midtones of the image, while leaving the black point lifted and the white point muted. Using RGB curves introduces more saturation to the image as a result, so the overall saturation is reduced until the skin tones feel natural again, within the context of the soft look we're going for (**Figure 10.4**).

Figure 10.4 The image after adding back some localized contrast

At this point, the woman's pants are looking pretty washed out; since they're supposed to be black, the lifted black point is most obvious here. After adding a soft vignette that's weighted toward the bottom of the image, you can lower the Lift contrast control, just a bit, in order to add a bit more density back to the shadows (**Figure 10.5**).

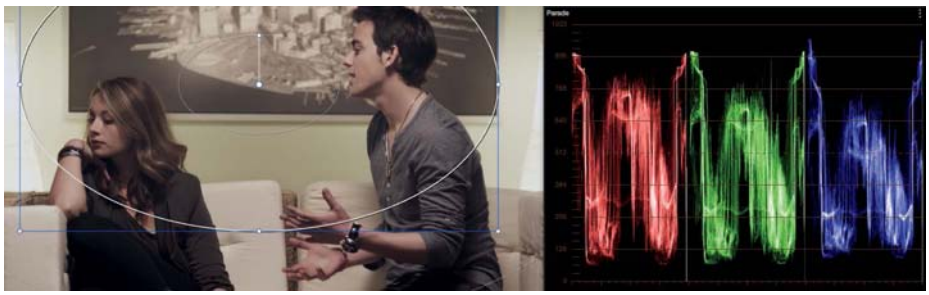

Figure 10.5 Adding more contrast by lowering the black point a touch via a subtle vignette around the edge of the frame

The result (**Figure 10.6**, bottom), if we compare it to the camera original image (Figure 10.6, top), is a soft, muted look that offers good separation of the performers from the background, and a clearly stylized look that offers a distinct signature to the program.

Figure 10.6 Before (top) and after (bottom) comparison of this flat look. The result appears much flatter when viewed on the video screen then it does in print.

The next example takes a different approach, tailored to the tonal range of the image by raising the Lift control to wash out the shadows and lowering the Gamma control to put more density in the man's face, but then lowering the Highlight contrast control of the Log controls to quickly compress just the top of the image, while leaving the midtones alone. An additional overall boost to image saturation along with a large cooling adjustment made by pulling the Offset color-balance control toward a blue-cyan split lends a brighter, cheerier feel to this style of flatness, while a second adjustment using the Hue vs. Sat curve reduces runaway "plasticky" saturation in the green grass and blue pinstriping of his shirt. Again, the camera original isn't super-high contrast, but careful contrast adjustments and and selective saturation increases using curves make it possible to soften the black

point yet retain enough image contrast where it counts, while hanging extra saturation in just the right places to have some fun (**Figure 10.7**).

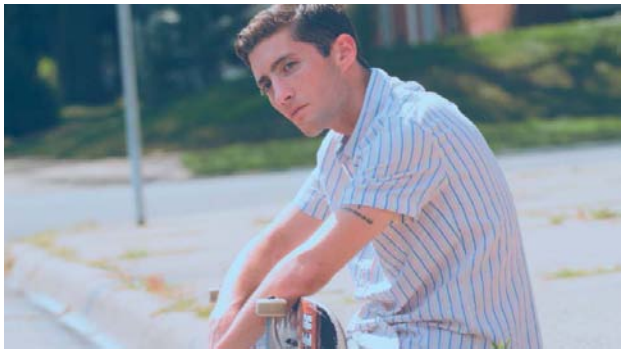

Figure 10.7 Above, the camera original image. Below, a flat treatment of this exterior shot.

In this case, a reduction in overall saturation has also been accompanied by a boost to the saturation of just the reds using the Hue vs. Sat curve, to keep the man's face clearly readable. A reduction in luminance contrast doesn't have to be accompanied by a reduction in color contrast.

So, that's the general idea. Before ending the chapter, I want to leave you with some wisdom from Warren Eagles, who told me that it's a misconception that it's easy to create flat looks and that it won't take long. The truth is, this sort of look, precisely *because* it packs so much into such a narrow tonal range, can make shots more challenging to match, because it forces you to balance small adjustments from one clip to the next that are much more noticeable to the audience because of the reduced contrast.

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CHAPTER 11

FLATTENED CARTOON COLOR

This chapter explores a technique that lets you radically transform an image using relatively simple steps. It requires an application that's capable of using transfer/composite/blending modes, as it uses the Darken blending mode along with a blurred version of an image to flatten the color while retaining some outline detail from the underlying image it's combined with.

It works best with images that are well exposed, with crisp detail, although you'll get different and interesting effects with other kinds of clips.

NOTE

This example is shown in Assimilate Scratch, which lets you use composite modes to combine "scaffolds," which are additional corrections you can layer over one another.

1 Grade the clip the way you want it to appear. For this technique, high-contrast images with bright highlights and sharp shadows work well (**Figure 11.1**).

Figure 11.1 The originally graded image. This town could use some fun.

2 You want to duplicate the grade or layer. How you do this depends on the application you're working in. In Scratch, copy the settings for the current grade; then create a new Scaffold and paste the grade settings into the Scaffold. In a layer-based application, you would duplicate the clip or grade layer in the timeline so that the copy was superimposed over the original.

3 Use your application's Darken composite mode to combine the new layer with the original (**Figure 11.2**). At first, nothing will appear to happen.

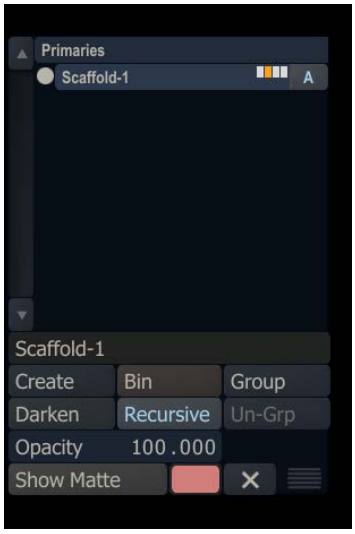

Figure 11.2 Adding a "scaffold" in Assimilate Scratch and copying the settings of the Primary to it creates essentially a duplicate correction. We set its composite mode to Darken.

4 Blur the duplicate grade, and the flattened cartoon effect (**Figure 11.3**) will manifest itself (in Assimilate Scratch, the image can be blurred using parameters in the Texture menu).

Figure 11.3 In the flattened cartoon effect, color is averaged together, and only the darkest strips of fine detail remain as a sort of outline.

This works because the Darken composite mode compares each pair of overlapping pixels and chooses the darker of the two to use for the resulting output. Because blurring an image reduces its contrast ratio by mixing the lighter and darker parts of the image together, the shadows of the blurred duplicate grade are just a little bit lighter and the highlights are just a little bit darker than those in the underlying layer.

The result is that the darkest sharp-edge details from the bottom layer and the darker blurred highlights from the top layer are combined. The resulting image should look like a soft, pastel version of the original, with high-contrast, grainy edge detail at the darkest edges of the subjects.

You should consider this example as a starting point for further experimentation. Composite modes can create many unexpected effects when used with superimposed duplicate clips with different filters applied.

TIP

To fine-tune this effect, you can adjust the Gain contrast control corresponding to the bottom layer, lowering it to add detail back into the image or raising it to further flatten the image.

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CHAPTER 12

GLOWS, BLOOMS, AND GAUZE LOOKS

If you're looking to add a touch of light and intensity to a clip, you can create one of several kinds of glow effects. The key is in choosing the effect that best matches the image at hand.

- **Subtle glows** can simulate the way that highlights in exposed film *bloom*, rather than clip, as with video. Film bloom is a soft glow that emanates from and surrounds overexposed regions in the image, and it is often deliberately induced by the DP because of its stylized look. Adding glow to overexposed video highlights can somewhat simulate this effect, as well as take the harsh edges off. This can be done using HSL Qualifiers to selectively lighten a blurred key matte.
- **Gauze effects** are often applied to soften facial features or other image details to lower overall image contrast and sometimes to create a "romantic" look (although if abused this effect can make your program look somewhat dated). Although traditionally created with such time-honored techniques as using gauze, nets, or pantyhose stretched in front of the lens, or fog/pro-mist/diffusion filters sandwiched in a matte box, many of these effects can be simulated using composite modes or dedicated effects.
- **Big-glow effects** might include any kind of huge, spread-out glow; these create really aggressive looks. These are more of a special effect, and while you can create these yourself, it's also common to use one of many available third-party glow filters.

Since most glow effects deliberately boost the highlights to create their effect, they often reintroduce illegal white levels. If you add a glow filter to a clip that already has bright highlights, you'll likely have to compress the highlights even more by lowering the Gain control or by adding a roll-off at the top of your luma curve, if you don't want to clip the highlights outright.

CREATING GLOWS USING HSL QUALIFICATION

One way of creating a controlled, subtle glow is to abuse the key refinement parameters (blur and/or shrink) of your HSL Qualifier controls. This is an efficient and customizable technique that works in any grading application that has standard secondary correction available.

1 Once you've finished the initial corrections to set the overall color and contrast of the shot, use the Luma qualifier to isolate the highlights of the picture. Use the tolerance controls to keep the initial key somewhat soft.

2 Here's the trick that creates the glow. Typical uses of secondary color correction necessitate minimizing the amount of soft spill around the secondary key to prevent haloing. For this effect, you're going to *deliberately* crank up the Soft/Blur control to create haloing, which will create the glow. If there's an additional Shrink or Dilate parameter, you can also use that to grow the key if you want a larger, more distinct core.

3 Finally, to create the actual glow, raise the Lift contrast control to create a bright glow (**Figure 12.1**).

Figure 12.1 Creating a glow by keying the brightest highlights, softening the key, and brightening the result

NOTE

This technique is great for adding a nice, subtle glow in the highlights, but keep in mind that it's really easy to create illegal luma and chroma levels, so it may be necessary to compress the upper highlights in a subsequent correction.

4 For an added bonus, drag the Midtones color balance control toward a warm or cool hue to add a bit of color to the dimmer fringes of the glow.

WATCH OUT FOR CHATTERY KEYS

When I watch programs, one of the things I've become really sensitive to is a glow effect that "chatters" because the key that was pulled to create it was noisy. It's a peculiar kind of look, and it is not particularly flattering.

The best way to avoid this if you're in a situation where simply adjusting the Luma qualifier doesn't eliminate the problem is to somehow blur the image that you're using to pull the key, without blurring the actual image that you're applying the effect to. For more information, see Chapter 5 of *Color Correction Handbook*.

OTHER OPTIONS WITH THIS TECHNIQUE

One of the nice things about using simple HSL Qualification to create glows is that you have an enormous amount of control over where the glow appears and how it looks. Here are some pointers:

- Expanding and contracting the key lets you create wider or thinner glow effects.
- The Lift or Gamma contrast controls create a nice, strong glow within and immediately surrounding the highlights of the image without blowing out the highlights.
- The Gain contrast control lets you pump up the glow effect even in the highlights.
- The Gain color balance control is useful for introducing an overall tint to the glow, but the result may introduce illegal chroma levels within the highlights.
- The Lift and Gamma color balance controls can also be used to add an additional tint to the glow, giving the effect of a secondary glow coming off the subject.
- If you have the option of adjusting the horizontal and vertical amount of blur applied to the key individually, you can create a directionally asymmetric glow effect.

CREATING GLOWS USING MATTE EXTRACTION

This next technique for creating glows is easy if you're using a grading application with more sophisticated compositing tools. It's good when you need to create huge, bonfire glows. We'll start with the image in **Figure 12.2**.

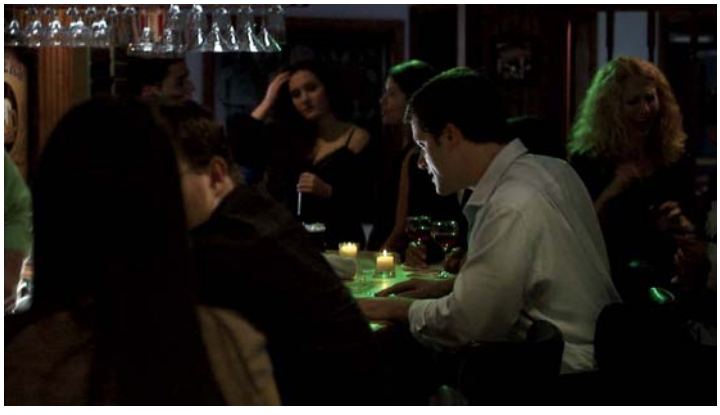


Figure 12.2 The original image that we'll be firing up with a giant glow

NOTE

It's useful to bear in mind that, to the compositing artist, a matte is simply a high-contrast grayscale image. You don't have to just create mattes using HSL Qualifiers and vignettes; you can create them using contrast controls, curves, RGB multiplication operations, or any other technique that cleanly isolates an upper range of image tonality.

1. The first step to creating the glow, after you've defined the look of the original image, is to extract a glow layer using one of a variety of methods. This layer could be a matte, or it could be a colored image, but it should be a treatment of the original image that isolates a subset of highlights and bright midtones to which you want to add a glowing heat.

2. Now, use the luma curve (labeled Master in Assimilate Scratch) to create just the high-contrast image you need, corresponding to the regions of the picture you want to glow up (**Figure 12.3**).

Figure 12.3 Creating a glow layer that isolates the highlights and upper midtones using the Master (luma) curve in Assimilate Scratch

3 Next, blur this image to taste (**Figure 12.4**). Keep in mind that the bigger the blur, the softer and more diffuse the resulting glow effect will be for strength (Blurring in Scratch is found within the Texture menu).

Figure 12.4 The blurred glow layer

Another decision you have to make is whether you want the glow layer to be colored. Leaving color in this layer will result in a much hotter, more saturated glow effect. On the other hand, desaturating the layer will create a purer, whiter glow. It's all a matter of discretion, but for this example, reduce the saturation to about half; you want a colorful glow, but you don't want it to be too radioactive.

4 To create the actual effect, use the Add or Screen composite modes to blend the glow layer with the underlying image. Add will create a white-hot glow, whereas Multiply will result in a more restrained effect. In either case, you can use your application's blend or opacity parameter to soften the effect as necessary (**Figure 12.5**).

Figure 12.5 A huge and highly stylized glow effect using composite modes—just the thing when you need to create a giant effect

MULTILEVEL GLOWS

If you really want to go for the gold when creating a glow effect, then instead of creating just one soft glow layer, build multiple overlapping glow layers with differing sizes. To see how this works, **Figure 12.6** shows a floating zombie with its head on fire that provides an excellent excuse for adding some glow. The base image has been graded to produce a high-contrast image emphasizing murky shadows and the brightness of the flame. However, a bit of glow might just make that flame glow hotter.

Figure 12.6 Before we add glow, this burning zombie head needs more cowbell.

Using any of the previous techniques, you'll extract multiple overlapping glow layers, each with a wider spread than the last, with possibly different directional spreads and tints, and then combine them to create a sandwich of varied glow. For this example, two different glow layers are created using extremely high-contrast curves and blurring: a broader one that includes most of the flame that is blurred out the farthest to create a light feathering and a tighter one including only the hottest parts of the flame that is blurred a bit less (**Figure 12.7**). To further differentiate these glows, the blur of each layer is oriented along a different axes, one horizontally and the other vertically.

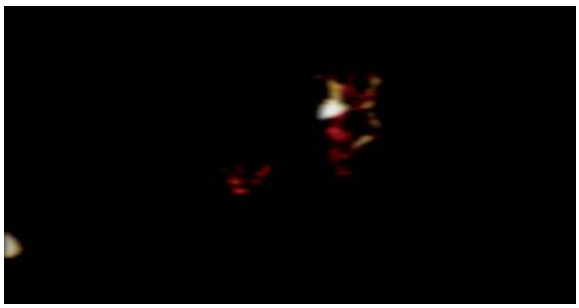


Figure 12.7 The two glow layers we've extracted from the original image using high-contrast curves but keeping the color

When you add these two layers with the original grade, the result is a multilevel glow with a more interesting spread (**Figure 12.8**).

Figure 12.8 The final result, using the Add composite mode to combine the two glow layers with the original image

Using this technique, you can add as many additional levels of glow as the image supports, even isolating specific highlighting features of the image to add more specific types of glow to each one.

CREATING GLOWS USING PLUG-INS

If your grading application is compatible with third-party plug-ins, you can also use third-party glow plug-ins that can produce geometric effects that are difficult or impossible to build manually. GenArts' Sapphire has many of these sorts of effects, which create glints, prisming, rainbow effects, and multichannel blurs with bleeding color that can be customized to create an array of pseudo-optical effects (**Figure 12.9**).

Figure 12.9 The S_GlintRainbow and S_Glow effects from GenArts' Sapphire, modified from their default settings to create more subtle effects

SAPPHIRE GLOW FILTERS ARE THE GOLD STANDARD

I try not to favor one vendor over another, but I don't think anyone would argue with me when I say that GenArts' Sapphire filters have set a benchmark for excellence in terms of lighting, glow, and optical effects. Chances are that you've already seen them in action if you've seen any movies in the last five years. The Sapphire set has many other excellent filters as well, and many professional grading applications (Resolve, Scratch, Baselight, Mistika) are compatible with them. They're not cheap, but they add a lot of flavor when you need it and are designed for incredible customizability so you can make these effects your own.

AGGRESSIVE GLOWS AND BROADCAST SAFE

One last note: The glow effects shown in this section tend to add a lot of saturation to areas of high luma. The result will almost guarantee excursions that aren't broadcast legal, and yet a certain amount of clipping is necessary to create these white-hot highlights.

An easy way to have your cake and eat it too is to add one last correction after your glow effect, wherein you add a control point near the top of a luma curve that you can lower the topmost control point or use your application's *soft clipping* feature (so named in DaVinci Resolve, though other applications have similar features) to compress or "roll off" the clipped highlights, making the edges seem less harsh. Either of these approaches will bring down the top of your signal a few percent in order to possibly create headroom for additional saturation excursions that you want to keep (**Figure 12.10**).

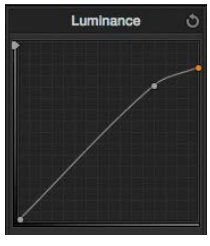


Figure 12.10 A curve used in a postprocessing operation to help keep the highlight saturation legal

As always, keep an eye on your Waveform Monitor (set to FLAT so you can see the saturation) or your composite scope to see whether you're dealing with a QC violation. Of course, if you have a clipper, this may be less of an issue, but you still want to be aware of how hard you're pushing the highlights of the image.

TIP
By using either HSL Qualification or a shape/Power Window in conjunction with this technique, you can selectively add gauzy blurs to actors' faces, which is a common strategy.

CREATING GAUZY GLOWS USING SUPERIMPOSED CLIPS

You can create gauze effects by superimposing a clip over itself, blurring it with a Gaussian Blur filter, and then using a composite mode to blend the two layers together. The exact type of gauze effect depends on the composite mode you use, but all of these effects serve to reduce detail, soften the overall image, and subtly lower contrast.

NOTE
The more blurred the superimposed layer is, the softer the effect will be. How much blur you need to add depends on the frame size of the project—higher-resolution projects require more blur for the same effect.

1 After grading the initial state of the clip, add another correction (or scaffold in Assimilate Scratch).

2 Make sure the grading settings from the primary grade are copied to this new correction, and then use whatever parameter is available to add some blur to the superimposed correction (in Assimilate Scratch, Blur is found in the Texture menu).

3 Finally, to create the effect, set the superimposed correction to use the Lighten composite mode (**Figure 12.11**).

Figure 12.11 Compositing a blurred version of an image with itself using the Lighten composite mode in Assimilate Scratch

TIP
If your grading application supports it, Overlay is another good, general-purpose composite mode for this type of effect.

Lighten has the practical effect in this situation of restricting the softening effect to the highlights of the image, leaving the underlying dark detail intact.

4 If the initial effect is too strong, either you can adjust the amount of blur that's being applied to the composited correction or you can adjust its opacity. As you can probably guess, lowering the opacity reduces the overall effect, while raising opacity intensifies it.

OTHER OPTIONS WITH THIS TECHNIQUE

You can also alter the effect by using different composite modes to combine the blurred and unblurred layers. Use the following guide to experiment with the effects of different composite modes on the preceding exercise, while viewing the effect on the image's contrast in the Waveform Monitor:

- *Add* creates an extremely hot glow that generally works best with lower opacity settings, because it intensifies highlights so much. In the image in Figure 12.11, an opacity of 17 would have worked well.
- *Multiply* darkens the overall image while softening it.
- *Screen* lightens the overall image while softening it.
- *Overlay* gives the image a soft overall glow, with almost no effect on the contrast of the image.
- *Hard Light* increases the contrast, raising the highlights and lowering the shadows.
- *Soft Light* gives a soft glow while reducing the contrast, lowering the highlights, and raising the shadows.
- *Darken* lowers the highlights, while leaving the shadows alone.
- *Lighten* raises the shadows, while leaving the highlights alone.

DAVINCI RESOLVE'S BUILT-IN MIST

DaVinci Resolve has a *Mist* function, found within the Blur tab, that lets you similarly create gauzy looks, designed to simulate a variety of "Pro-Mist" optical filter looks.

When you click the Mist radio button, an additional set of parameters becomes editable: Scaling and Mix. Lowering the R, G, and B Radius (which are ganged by default) sharpens the image, but then lowering the Mix parameter blends blurring into the image based on image tonality. This lets you decide how much of the image you want to be "misted," the highlights, highlights and midtones, or highlights, midtones, and upper shadows (**Figure 12.12**).

Figure 12.12 Creating a gauzy effect using DaVinci Resolve's Mist controls

TIP

The resulting Mist effect also lightens the highlights and midtones of the image, so you'll want to keep one hand on your Gain contrast control if you don't want this to happen.

Higher Mix settings blend only the blurring effect into the highlights, while lower Mix settings mix blur into progressively darker midtones and then into the shadows as you reduce this setting.

Meanwhile, scaling has the practical effect of attenuating or exaggerating the current blur effect at whatever Mix setting you happen to be using. So, adjust the Mix setting until you have a good balance of blur and detail, and then adjust Scaling until you have an appropriate amount of overall "mistiness."

BASELIGHT'S SOFTEN OPERATOR

FilmLight Baselight has a Soften operator with two parameters: Amount and Detail. *Amount* defines how much gauzy softness to apply to the image, while *Detail* defines how much of the image's original sharpness to preserve.

CHAPTER 13

GRAIN, NOISE, AND TEXTURE

In general, it's pretty safe to say that while noise is something to be avoided, grain is an aspect of the cinematic image that cinematographers and directors embrace (although that is beginning to change). This chapter compares the difference between digital noise and film grain and includes some tips for how integrating noise into an image can be beneficial and ways you might go about doing it.

WHAT IS DIGITAL NOISE?

Along with the individual pixels of detail inherent to any image, digital camera circuitry introduces *noise*. The light-sensitive silicon chips (currently, CCD or CMOS) at the heart of modern video recording cameras are, below a certain threshold of exposure, inherently noisy. As with audio recording circuitry, there is a noise floor at which a certain amount of random electronic fluctuations always occurs. The amount of this noise depends on the quality and size of the chip(s) used by a particular camera and on the amount of light within the image being recorded.

When the signal-to-noise ratio falls below a certain threshold—in other words, when the video image becomes underexposed—the noise becomes visible, appearing as an animated "buzzing" superimposed over your video.

Increasing a digital camera's Gain or ISO setting potentially amplifies noise along with the rest of the video signal. Similarly, stretching the contrast of an underexposed clip has the same effect, exacerbating noise that's already latent within the image.

WHY WOULD I ADD NOISE TO A PERFECTLY NICE IMAGE?

Sometimes, even when you've matched the contrast and color of an insert or pickup shot perfectly with the other shots in a scene, it still sticks out as a result of the noise or grain of the new clip not matching that of the other clips already in the scene. In cases like these, even if the incoming shot is better exposed than the others, the necessity of matching shots in the scene dictates that you either remove noise from the other shots or add noise to the current shot. Which you do is up to you, but in many cases adding a layer of noise to a single shot may be the path of least resistance.

You'll also find instances of video noise increasing in subsequent angles of coverage as the daylight slipped away from the filmmakers, at which point you'll be forced to add noise to pristine footage shot at 4 p.m. so that it matches extremely grainy footage shot at 6:30 p.m. (it's heartbreaking, I know).

In other instances, you may be doing some limited compositing such as creating a sky replacement and the sky footage doesn't have the same noise pattern as the rest of the clip. In all of these instances, adding video-style noise to clips, either individually or in groups, can help you mix otherwise tricky-to-match elements together.

WHAT IS FILM GRAIN?

To the untrained eye, digital noise and film grain may seem very similar, but the origins of these phenomena are quite different (**Figure 13.1**). Unlike video noise, which is a spurious pattern of pixels that has nothing to do with the image itself, film images are *made* of grain. Understand this fundamental difference, and you can better replicate the effects.

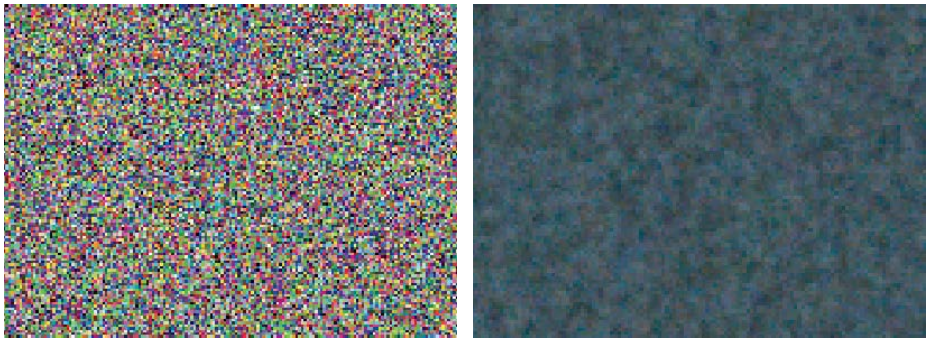


Figure 13.1 Left, a zoomed-in excerpt of procedurally generated video noise. Right, a zoomed-in excerpt of scanned 35MM film grain (courtesy of Crumplepop).

Film stocks are composed of three light-sensitive layers (nested within several other protective coatings), each of which is designed to selectively absorb the red, green, and blue components of light coming in through the lens of the camera. Each of these layers consists of microscopic silver halide crystals suspended in gelatin.

When exposed to light, these crystals stick together, becoming metallic silver. The more each layer is exposed, the more crystals become metallic, and the *denser* that layer becomes. Once developed, each layer's exposed silver grains are set, and the unexposed silver halide crystals are removed. Together, the three combined layers of dyed silver grains compose the final image.

NOTE
Reversal film stocks are once-popular stocks that expose a positive image to start with.

Film colorists refer to image *density*, which is a description of how well exposed each individual layer of film is. The process just described results in a *negative* image, because the brightest areas of the picture create the most silver grains, while the darkest areas of the picture have little to no grain. The negative image is made

positive by printing onto another film stock to create a print for projection or in the *telecine* or *datacine* process by transferring the image to a digital format.

HOW DOES FILM GRAIN DIFFER?

Film grain varies with the stock that was originally exposed, the method of development, and the frame size and video format to which it's eventually transferred. For all of these reasons, film grain is tricky to accurately reproduce with digital tools alone.

Film stocks that are designed to be more sensitive to light (*fast* stocks) tend to employ larger individual grains that expose more quickly with less light. The resulting images are grainier than other stocks that require more light to expose (*slow* stocks) but have much finer grain.

When you transfer film footage to a high-resolution digital media format, you can see that film grains are not per-pixel, like video noise. If you zoom into a per-pixel view, each grain is made up of a cluster of pixels that are naturally anti-aliased, providing a smooth transition from one grain to the next (**Figure 13.2**).

Figure 13.2 Blown-up shadow grain detail in two different telecine'd film excerpts, both from car interiors. Left, a 16MM film transfer; right, a 35MM film transfer.

Individual film stocks exhibit differing grain patterns and sensitivities in each color channel, similar to the varying noise patterns in the red, green, and blue channels of recorded digital video (**Figure 13.3**).

Figure 13.3 The grain patterns of the red (left), green (center), and blue (right) channels of a scanned frame of Kodak Vision 3 stock exposed for grain.

FILM GRAIN DURING TELECINE AND DATACINE TRANSFER

Because telecine and datacine equipment use digital imaging technology to transfer film information to digital formats, it's worth discussing the intersection of film grain and video noise.

The imaging components of modern telecine equipment are made to automatically identify and correct noise and visual artifacts introduced by the telecine itself, so electronic noise is minimized from the start. In most cases, what little noise is introduced should be indistinguishable from the grain of the film being transferred.

Furthermore, many telecines and datacines have additional noise reduction features that allow the operator to reduce film grain prior to recording to video, if so desired.

Finally, if you're spending the time and money to transfer film to a digital format, you should ideally master to an uncompressed video format with 4:4:4 or 4:2:2 chroma subsampling. This ensures maximum flexibility when you're making further corrections to your images and prevents compression artifacts from contributing to the noisiness of the image.

WHEN ADDING GRAIN AND NOISE CAN HELP

Most of the time, you do your best to *avoid* adding noise to the clips you're correcting. However, it's important to know that not all noise is bad. A limited amount of noise also has some unexpected benefits.

- Grain and noise reduce the visibility of banding artifacts in 8-bit video formats, since you're essentially dithering the entire image.
- Grain and noise can also give still images that you're using as insert shots some life so they look more like actual video footage.
- Adding a bit of grain or noise to title text and other illustration-style graphics can take the edge off and further integrate the graphics with the background image.
- Adding grain or noise can make a clean, well-exposed insert shot better match an otherwise noise or grainy scene.

SIMULATING FILM GRAIN

You can simulate film grain in a few ways. None of them will be perfect, but if you're careful, the results can be convincing enough.

For a quick-and-dirty solution, many applications have a built-in facility for generating noise. In a pinch, this can be used in conjunction with a slight blur to soften the edges of the noise particles to more closely approximate film grain. The result can be blended with your image using composite modes within applications that support the layering of multiple images.

If there is no built-in noise-generation capability, then you can also use a compositing application to create and export a high-resolution clip of noise or grain that matches your project's resolution. For example, After Effects has a respectable Add Grain effect with controllable intensity size and edge softness (among many other attributes) that you can use to create a wide range of faux grain (**Figure 13.4**).

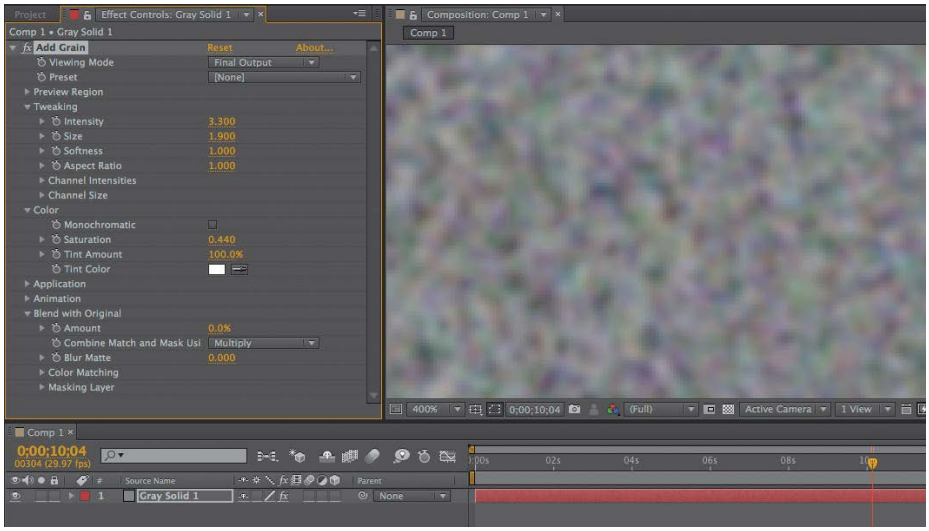


Figure 13.4 The Add Grain filter in After Effects, used to create a generic grain layer that can be applied elsewhere. Since it's a generator, you can customize the results extensively.

By applying the Add Grain filter to a 50 percent gray solid layer and customizing its attributes as necessary, you can create a grain field that will composite nicely with most clips.

COMPOSITING ACTUAL FILM GRAIN

For the most organic solution, you can purchase scanned film grain stock footage from a variety of vendors, using whatever mechanism your application has to blend a noise layer from a second media file with the image you're working on.

One of the most common methods of combining a grain element with an image is to use composite modes, specifically the Overlay composite mode. This is an extremely flexible technique that can be applied in a few different ways.

If you're working with an application that allows you to superimpose clips on a timeline, then you can edit a section of scanned film grain onto a video track above the scene you need to add grain to (**Figure 13.5**).

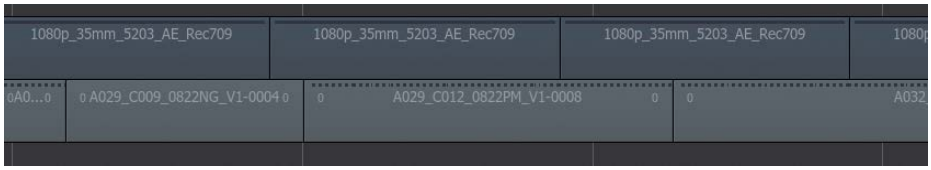


Figure 13.5 Superimposing grain clips above an edited timeline

Once placed into the timeline, you can use your application's controls for using composite or blend modes to mix the grain element into the video images below. For example, Smoke lets you add an Axis effect (**Figure 13.6**) to clips, within which you can specify a composite mode and transparency percentage with which to blend that clip with those underneath it on the timeline.

Figure 13.6 The Axis effect controls in Smoke let you blend a superimposed clip with whatever clip is beneath it on the timeline.

This functionality, in various similar forms, is fairly standard for non-linear editors and other applications that have a timeline-based environment for editing, such as DaVinci Resolve. Alternately, you can use your grading application's built-in mechanism for combining an external image with the current shot as a grading operation.

ADDING GRAIN IN DAVINCI RESOLVE

DaVinci Resolve has a mechanism for using clips, imported as external mattes, for adding texture to images within a grade. First, you must import the clip you want to use as a textural element as a matte, either attaching it to a specific clip (for use in a clip grade) or importing it as a free-floating matte clip (for use in a timeline-wide track grade).

Once you've done that, you can right-click any node within a grade and choose the matte you want to use from the Add Matte submenu of the contextual menu. Nodes in clip grades display only the mattes that have been attached to them, while nodes in track grades display a list of all unattached mattes that have been imported into the media pool.

Once you choose a matte, it appears as an EXT MATTE node in the node editor, which has a round, orange RGB output at the bottom right of the node that can be connected to the second input of a Layer Mixer node in order to use the Layer Mixer's ability to blend two nodes together via a composite (typically, Overlay) mode (**Figure 13.7**).

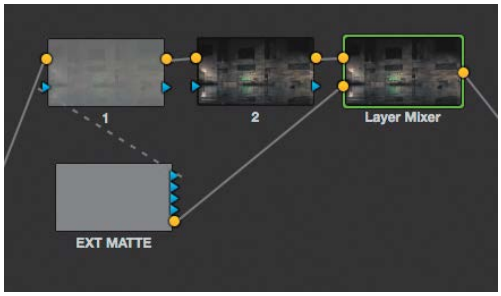


Figure 13.7 The node setup required to overlay a grain texture from a media file, all within the Color page grade of DaVinci Resolve

If you want to manipulate the grain layer you're using, you can connect another corrector node in between the EXT MATTE and use it to manipulate the contrast, color, and sharpness of the grain layer before it's composited via the Layer Mixer (**Figure 13.8**).

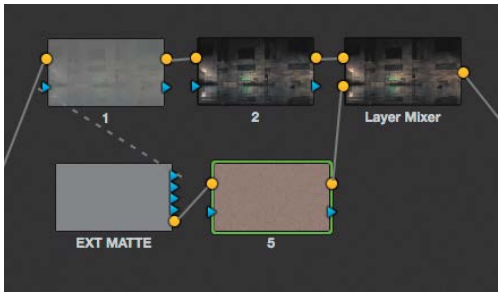


Figure 13.8 Adding a color correction between the EXT MATTE and Layer Mixer nodes lets you manipulate the visual quality of the grain element.

Figure 13.9 shows the results.

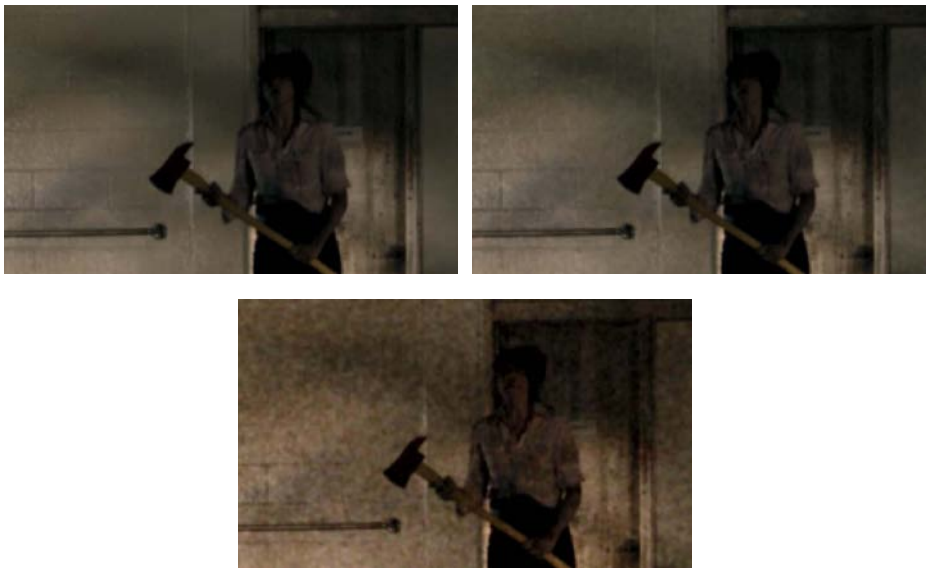


Figure 13.9 Top left: the original image, zoomed in, with no grain applied. Top right: the grain-enhanced image. Bottom: the result of modifying the grain with an additional correction prior to mixing it with the image.

ADDING GRAIN IN BASELIGHT

FilmLight Baselight has a general-purpose control for using composite modes and the Result Blending slider to combine the image being adjusted within a particular layer with the original image, with other layers, or with other media files. When blending an image with other media files, these controls are perfect for adding grain and texture either to individual clips of your program, or to the entire sequence, depending on how much of the sequence you need to add texture to.

Assuming you want to add a grain texture to the entire program, you begin by inserting or adding a new layer to the sequence. Then, in the Source menu of the Result Blending section of controls for that layer, click Second Input (**Figure 13.10**).

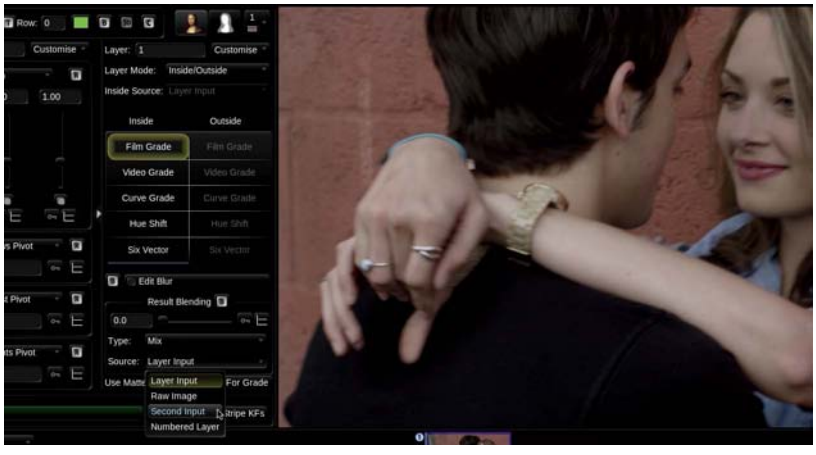


Figure 13.10 Choosing Second Input in the Result Blending controls to add another layer of media to blend into the grade

This adds a Blend Source reference strip to the grade in the timeline (**Figure 13.11**).

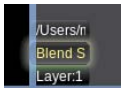


Figure 13.11 The Blend Source strip that's added to the grade

Select the new reference strip and click the Swap For Sequence Strip button to select the media file you want to blend with the image. Use the Sequence Browser that appears to locate and add the film grain (or texture) media file to the operation performed by this strip. At this point, you'll need to select the type of composite mode you want to use (Hard Light, Overlay, and Add all work well for different sorts of grain images, depending on how bright they are), and set the blend amount slider to something other than 0.0 to blend the grain layer into your image by as much or as little as you like (**Figure 13.12**).

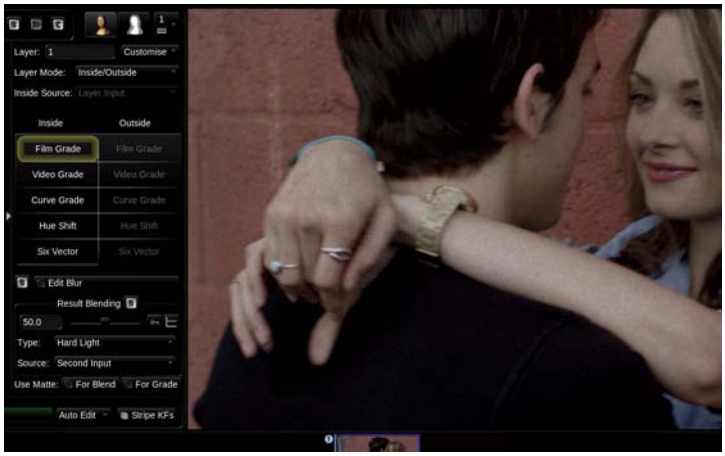


Figure 13.12 The result of blending a film grain clip using the Hard Light blend mode

If you need to make an adjustment to the grain layer you're blending with the image, you can add a FilmGrade below the grain layer and adjust the color and contrast in whichever way will produce the desired result (**Figure 13.13**).

Figure 13.13 Adding another layer with which to adjust the Blend Source strip above

Furthermore, you can use two cursors in the timeline (with the second set to bypass) to wipe between the image with blended grain and the original in order to evaluate the difference between the two (**Figure 13.14**).

Figure 13.14 Using a split-screen to evaluate the result of an application of grain

ADDING GRAIN IN ASSIMILATE SCRATCH

In Scratch, there is a set of Texture controls that is useful for compositing film grain or other textural elements with a clip as part of your grade. First, you must import the grain clip into a construct for use in your Scratch project. Then, in the Matrix, open the Texture controls to access the Front and Matte image controls (**Figure 13.15**).

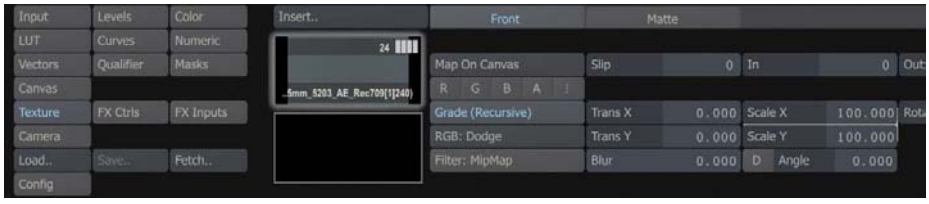


Figure 13.15 The Texture controls in Assimilate Scratch, shown populated with a texture clip that's being combined with the image using the Dodge composite mode

You'll add the grain element to the Front image control by clicking the Fetch button, which temporarily accesses the construct so that you can drag and drop the grain clip you want to use onto the Front image control.

With that accomplished, you can click the RGB button to choose one of the many composite modes available in Scratch (**Figure 13.16**).

Figure 13.16 Composite modes in Assimilate Scratch

In this case, the Dodge composite mode provides the best blend of the scanned Kodak 5203 grain clip that's available with the downloadable media that accompanies this book.

COMPOSITE MODES FOR ADDING GRAIN

The Overlay blending mode is most common for this sort of operation, but you can also try other composite modes to integrate a digital noise or grain layer into the image to achieve different results.

- **Multiply** and **Darken** both emphasize noise in the highlights, instead of the shadows.

- **Screen** and **Lighten** emphasize noise in the midtones and shadows.
- **Subtract** applies a uniform layer of noise over the entire image, intensifying the midtones and blacks in the process.
- **Overlay** and **Hard Light** both apply a more uniform layer of noise over the entire image, but without intensifying the midtones and blacks as much.
- **Soft Light** emphasizes noise in the darkest shadows.

FILM GRAIN STOCK VENDORS

The following companies offer different collections of high-quality film grain stock. Many of these collections also include flares and light leaks.

- **Grain35** (www.crumplepop.com) is a package of 11 35mm and 16mm scanned film grain assets from a variety of stocks, at 4K and 1080 resolutions.
- **Cinegrain** (www.cinegrain.com) offers three collections: their personal collection consisting of 50 clips at 1080 resolution; their indie filmmaker collections (125, 275, or 325 clips depending on the package); and their professional collection, with 425 clips. Each collection consists of 35mm, 16mm, and 8mm scans of grain, dirt, scratches, leader, flares, and splices, all at a variety of resolutions.
- **Rgrain** (www.rgrain.com) offers a set of film grain plates at up to 6K
- **Gorilla Grain** (www.gorillagrain.com) offers different sets of 35mm and 16mm film grain and light leak packages, at up to 2K resolution.

ADDING TEXTURE TO AN IMAGE

In our modern age of flawless digital perfection (at least according to some), there are times when a little more grit is necessary to provide just the right feel.

Film damage, digital macroblocking, analog dropouts, or dirt on transferred film can all add texture to an otherwise pristine shot, dirtying it up in order to make the shot seem older, more authentic, or just plain ruder (**Figure 13.17**). It's the colorist's equivalent of adding hiss and pops from a vinyl record to a digital audio recording.

Figure 13.17 Compositing a scratched and fogged film layer with an image using the Overlay blend mode.

One of the easiest ways of applying texture to a shot is to superimpose clips of what colorist Warren Eagles refers to as *shash*. Eagles explains at http://fxphd.com:

> *I started collecting clips back in 1990 when I was a Telecine assistant. Directors often asked me to put the VTR into record and just 'play' with the film. This meant spooling the film fast, running it off the machine showing the sprockets, and the edge code… A few directors even encouraged me to scratch their films, normally by spooling the film on to a dusty stairwell! Another common technique was to scratch the film with a scalpel just before it went through the telecine gate. Sometimes the film would literally fall apart, creating some great effects as the sprocket holes fell across the scanning beam. I wasn't popular with the early morning colorists who often wondered why they had shredded film scattered across their machines.*

There are many vendors of distressed film effects, glitches, floating dust (a particularly cool atmospheric effect), and other textural elements; many vendors of film grain also include distressed elements. The techniques for adding texture to a grade are identical to those for adding grain, described previously.

However, one thing to keep in mind is that, since textural elements are typically bolder than grain elements, you'll probably want to spend more time grading and adjusting these effects to make them fit into the grade (**Figure 13.18**). For example, when initially applied, an 8mm film scan applies a lot of green to an image it's being multiplied against.

Figure 13.18 Grading the textural element prior to compositing it against video to achieve a more appropriate result

After manipulating the film layer by warming up the highlights, boosting the Gamma contrast control to lighten the midtones, and desaturating it slightly, the resulting image merges more seamlessly and flatteringly with the woman's face.

TEXTURE AND DISTRESS STOCK VENDORS

All texture elements shown in this section are courtesy of Warren Eagles and FXPHD's Scratch FX, and the five elements that are included with the downloadable media for this book are free for you to use. If you want more, the following companies offer very different collections of texture, dirt, noise, and distress elements that you can use to add a completely different feel to images.

- **Scratch FX** (www.fxphd.com) is the personal film garbage collection of veteran colorist Warren Eagles and includes a wonderfully eclectic assortment of film damage, burns, light leaks, grain, and video elements for a variety of uses.
- **MDust** (www.motionvfx.com) is a collection of dust elements including floating particles to add atmosphere and depth to all kinds of shots.
- **Rampant Screen Damage** and **Rampant Glitch Effects** (ranpantdesigntools.com) are packages of analog and digital distortion, static, and artifacts that can be overlaid onto images to add deliberate distress.

ADDING TEXTURE AND GRAIN USING PLUG-INS

If your grading application is compatible with third-party plug-ins, packages such as GenArts' Sapphire have specific effects for adding different types of texture and grain. In the case of Sapphire, the Stylize group has the following plug-ins you may find useful: S_FilmDamage, S_Grain, S_JpegDamage, S_ScanLines, and S_TVDamage.

CHAPTER 14

GREENSCREEN COMPOSITING GRADING WORKFLOWS

One question aspiring colorists frequently ask is how to grade greenscreen shots and accompanying backgrounds that will be composited together, since even at the desktop level there are many options for how to handle this. Visual effects supervisor and colorist Gray Marshall shared how these workflows are handled at professional compositing facilities, and it boils down to two basic approaches: grading the dailies ahead of time or grading the final composited result with the aid of a pregenerated matte.

PREGRADING GREENSCREEN DAILIES

In this workflow, you grade the separate elements to match *before* you hand off the rendered media to compositing in an app like The Foundry's Nuke or Autodesk Smoke. The advantage of this approach is that it frees compositing artists from having to worry about matching the background and foreground plates, which will make them very happy indeed.

Most high-end compositing applications let you create a matte with one version of a greenscreen shot but then composite a different, altered version of a greenscreen shot. This means you can freely grade the foreground greenscreen shot to match whatever background it will be composited against, doing whatever you want, without any concern for affecting the green of the shot. If your grading application lets you create a simple composite by using an HSL Qualification as an alpha key, then you can grade the foreground plate in context with the background. Otherwise, you can achieve the same result using a conventional split-screen.

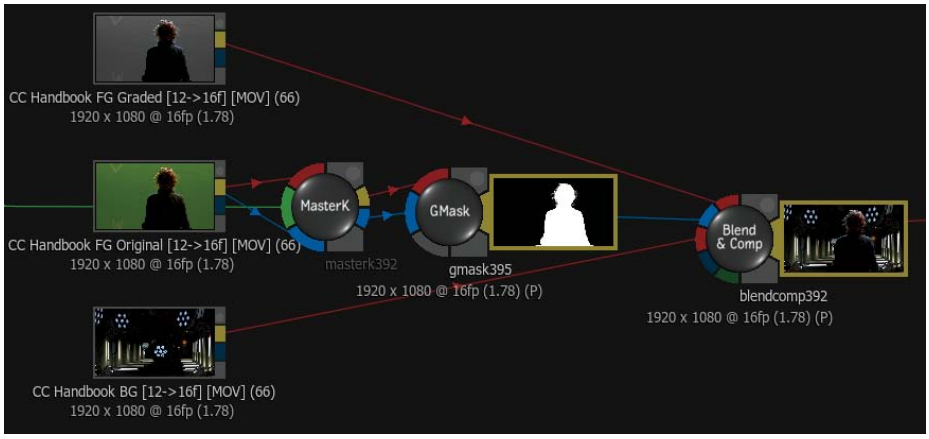
After you grade the shots to match, you'll be exporting three clips for the compositing artist: a graded foreground plate, an ungraded foreground plate, and a

background plate (**Figure 14.1**). As you can see, the green hues in the corrected foreground plate have been completely desaturated as part of eliminating the green fringing from the image. This renders the clip unkeyable, but that's not a problem.

Figure 14.1 From left to right: the graded greenscreen plate, the ungraded greenscreen plate, and the background plate

With these three clips, the compositor can pull a key off the uncorrected foreground plate and then assign the resulting alpha matte to the corrected foreground plate, as shown in this node tree within the ConnectFX compositing environment in Autodesk Smoke (**Figure 14.2**).

Figure 14.2 The schematic used in Smoke to composite these elements together



NOTE

While it's tempting to use HSL Qualification to apply separate adjustments to the foreground subject and background green of a greenscreen shot, I've learned that this doesn't work as well as you'd think. The resulting color differential in the fringing around the subject ends up being a hassle for the compositing artist, who'd much rather have just one simple color adjustment applied to the entire image, green included.

If you're in the less ideal situation of providing clips to someone using an application that isn't able to assign the key from one clip to a differently graded clip, then you need to be much more careful with how you grade the image. You can't summarily desaturate the greens, and you need to keep whatever adjustments you make to the image simple. You want to maintain whatever separation there is between the hue of the background green (or blue) and the hues of the foreground subject.

In this situation, the following workflow may be preferable.

POSTGRADING FINAL COMPOSITES

Another way of working is to simply provide clean, unmatched plates to the compositing artists, let them do their thing, and have them provide you with two assets: the finished composite and a rendered matte clip with the key they created to composite the foreground element against the background element (**Figure 14.3**).

Figure 14.3 The ungraded composite (left) and its accompanying matte (right) as provided to the colorist

NOTE

Most keyers provide a way of outputting the original image, the composite image, and the matte image, which lets you export the matte as a self-contained media file for use in other applications.

Most grading applications let you import a matte clip to use to limit the effect of a color correction application. In **Figure 14.4**, you can see how this is set up in DaVinci Resolve.

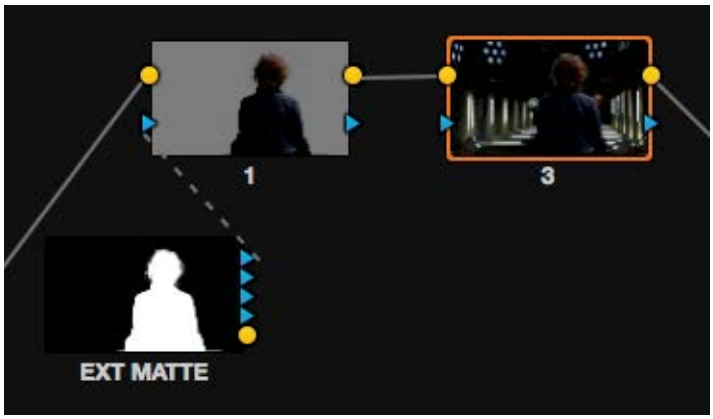


Figure 14.4 Importing a matte clip in DaVinci Resolve to moderate the effect of a grade.

With the imported matte connected to a correction, thereby making that correction a secondary operation, you can now freely grade the foreground subject to match the background subject (**Figure 14.5**).

Figure 14.5 Before (top) and after (bottom) regrading the composite to match the foreground and background

NOTE

This method, while effective, is less ideal than grading prior to or during the composite because you have more control over the color of fine detail before the elements have been married together than you do after.

When it comes to matching foreground and background plates in a composite, the techniques are identical to those described in Chapter 9 of *Color Correction Handbook*. For now, keep in mind that the RGB Parade and Waveform Monitor scopes are excellent tools that can show you if the color channel and luma levels of the foreground subject are not lining up appropriately with the color and luma of the background.

CHAPTER 15

LENS FLARING AND VEILING GLARE

Unfortunately, no contemporary writing on lens flare can ignore the public conversation surrounding J.J. Abrams' use of lens flares, most notably in his *Star Trek* films (2009, 2013). In fact, anyone searching for lens flare information online will, sadly, be flooded with *Star Trek* links. Personally, I think he gets a bad rap for a stylistic affectation that results from a variety of factors. Cinematic flaring is not a new thing, as can be seen by anamorphically shot science-fiction and fantasy films of the 1970s and 1980s (notably 1977's *Close Encounters of the Third Kind*, which I viewed again before writing this section and highly recommend).

On the other hand, classically trained cinematographers once spent years avoiding the visual artifacts caused by flaring, which at the very least can reduce image contrast and at worst can splash the image with so many streaks and octagons that, intentionally or not, it obscures the desired image behind a wall of flare (**Figure 15.1**). Avoiding flaring requires careful light control, including the use of light-blocking flags, matte boxes, lens hoods, or a PA strategically holding a piece of cardboard to cut the light coming from sources causing flare. Newer lenses employ special coatings and designs reduced to minimize flare, and prime lenses also reduce flare by having fewer lens elements.

Figure 15.1 Flare hitting a video zoom lens and washing over most of the image with a multi-element sparkle

In a May 23, 2013, interview with Casey Burchby of *LA Weekly*, cinematographer Daniel Mindel, A.S.C., shared some of the thinking that went into the use of practical flaring on *Star Trek*.

> *The training that I had as a camera technician was such that we were taught to stop any flares to protect the integrity of the photography. It always occurred to me that halation is something that we live with on a daily basis. Things halate—car windshields, light bulbs, everything. I wanted to allow that to happen in a way that*

> *brought more realism to what I was photographing. J.J. and I were looking at dailies on* Mission: Impossible III*, where we were getting incredible lens flares. He really loved what was happening, and it was sort of an open invitation to let it happen more.*

In truth, lens flares are a part of life if you're imaging scenes with intense, off-the-charts light sources directly within the frame such as the sun (**Figure 15.2**), stadium lighting, car headlights, or UFOs whose technology includes energy-emitting coatings (for whatever reason). Having such intense lighting onscreen without flaring would be contrary to the laws of physics.

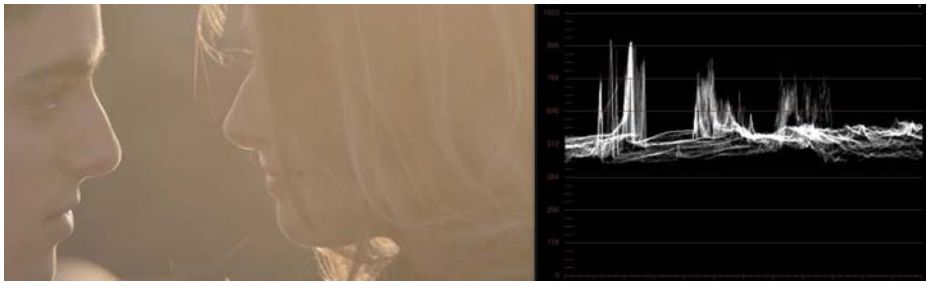


Figure 15.2 The sun is going to flare, in the aftermath of a camera pan.

In fact, in the right conditions the eye itself produces a veiling glare. In the article "Development of a system to study the impact of headlight glare in a driving simulator," Matthew Fullerton and Eli Peli begin by observing, "Light scatter inside and out of the eye causes a veiling glare which reduces retinal contrast across the visual scene and thus reduces visibility." This can be easily seen by looking at a lit candle and observing the faint halo of warm flare surrounding the flame. Such glare has made its way into fine art as streaks of light and gentle, halated glows seen in paintings for centuries, so the artistic use of flaring in its various forms is hardly new.

Over the years photographers started to judiciously incorporate flaring, first in wide landscape shots where inclusion of the sun was unavoidable and later in closer and more intimate photography, and slowly the deliberate use of flares was added to the cinematic vocabulary of motion pictures. *Easy Rider* (1969) is often cited as an early film in which flaring was embraced by cinematographer László Kovács, A.S.C., to provide more immediacy to the film as showing the sort of "run and gun" imperfections that would be more typically seen in a documentary (Kovács also did additional photography for *Close Encounters of the Third Kind*).

Since flaring is usually recognized by the audience as an optical artifact of practical shooting in documentary conditions, where controlled lighting is rare, it's also used to lend a sense of plausibility to visual effects films. *2001: A Space Odyssey* (1968) has many good examples of flaring used to lend documentary realism to fantastic scenes, and a recent viewing of the 30th anniversary "final cut" of *Bladerunner* (1982) revealed an unabashed use of lens flaring in the model effects, and a liberal allowance of veiling glare and flaring in the cinematography, adding tremendously to the atmosphere throughout the film. And clearly there are

innumerable examples of contemporary films using flaring as part of the integration between CG and practical photography.

Given all this background, colorists can use practical or artificial flaring to serve the following visual goals:

- Providing a sense of the momentous, of wide-open photography, implying the moment is special
- Soft flaring to lower contrast, similar to using glow or mist effects, which can give a romantic or nostalgic look to a shot
- Indicating phenomenal brightness and heat, both for the sun and for other light sources such as rocket engines, high-energy physics experiments, or floating UFOs
- Helping integrate composited elements into a scene by showing they're being hit by the same lens flaring that's washing over everything else
- Providing a hurried, "available light" documentary feel
- Adding an organic-looking fill light to scenes you're deliberately grading darker but within which you'd like to see into the shadows in specific areas

This last point is the most important one. Keeping in mind that flaring or glare reduces contrast, and colorists can use blurred artificial flaring as a tool in the grading process to lift shadows with a different sort of targeted fill light that, for the right shot, can give you a more organic-looking result than boosting image contrast within a window.

TYPES OF FLARING

There are two types of lens flaring. Of course, everyone knows that pointing a lens at the sun, or any other sufficiently bright light source, can produce a spectacular multi-element flare streaking across the image (**Figure 15.3**, on the next page). These flares are the result of intense illumination causing light to reflect and scatter within each element of a lens, and filters placed in front of a lens can exacerbate this effect, either accidentally or deliberately (using one of many styles of diffraction filters). Characteristics of this type of flaring include the following:

- Each element used by the lens contributes an individually visible flare shape within the image. Zoom lenses, with many different lens elements, are notorious for creating complex lens flares.
- The coatings applied to the elements, or aging of lens coatings, can tint the flare elements.
- Flare elements also have a pattern and shape created by the blades of the aperture, similar to the bokeh, or a shape of optical blur in shallow depth of field shots.

Figure 15.3 Flare from a direct light source hitting the lens

However, a more interesting type of flaring is the veiling glare that comes from lighting that's just off-camera (**Figure 15.4**). This sort of glare can be seen as a broad streaking or oval lightness that washes out the image, rather than the sparkly multi-element effect of an obvious flare.

Figure 15.4 Flare from a bright light source (the window) that's just off-camera but causing streaking flaring at the edge of the frame

This kind of veiling glare can also manifest itself as a broad wash of low-contrast fill that can lift the shadows of the region of the picture in which it appears (**Figure 15.5**). In all cases of flare, you can see by the accompanying Waveform Monitor analysis that the flaring is reducing image contrast in the region in which it appears most clearly. The WFM in **Figure 15.5** clearly shows that the glare at the left of the image lifts the shadows of the signal much more than the nonflaring shadows at the right of the image.

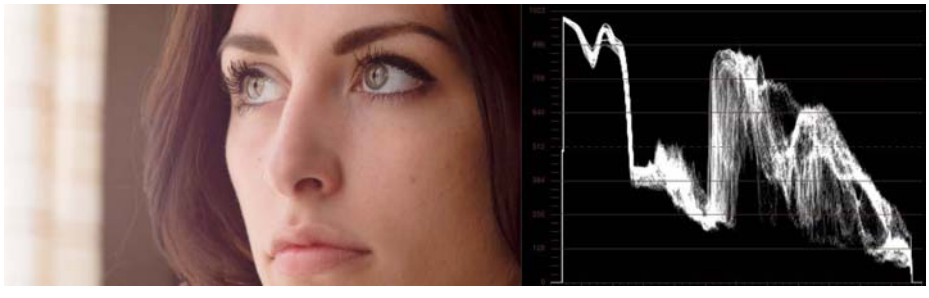


Figure 15.5 Glare from the window reduces contrast within the left half of the frame.

To see some interesting examples of both kinds of flaring, watch the Robyn video *Call Your Girlfriend* (DP: Crille Forsberg). Flaring is caused by the use of deliberately powerful on-camera lighting and anamorphic lenses, which exacerbate lens flaring in arresting ways by stretching the flaring elements sideways.

ADDING FLARING USING PLUG-INS

While cinematographers usually put flares where they want them, you may find yourself in situations where the practical on-screen lighting elements weren't bright enough to create a flare, yet you're requested in the grade to pump up the highlights to the point where flaring ought to be occurring. Or, you're working on a music video and the client just wants you to jazz up the image with an impressive flare. In these instances, grading applications are increasingly compatible with a variety of third-party plug-ins once the exclusive domain of compositing applications, such as GenArts' popular Sapphire plug-ins, or the classic Knoll Light Factory, with various types of lens flares, glows, and optical effects as part of the package (**Figure 15.6**).

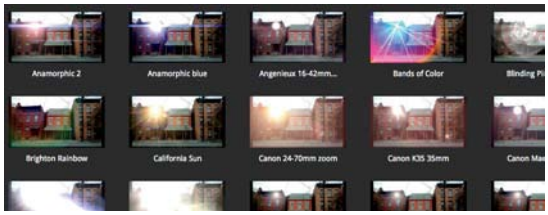


Figure 15.6 Various lens flare presets available from the GenArts FX Central browser

While it's tempting to just slap a lens flare on an image and call it a day, the following example will show you how to use a subdued lens flare to create more subtle effects, doing the equivalent of digital relighting to add some fill to an image, but with the added bonus of the texture and shape that flaring can add to an image, which provides visual interest above and beyond simply lightening the image.

For example, the image in **Figure 15.7** provides an establishing shot of the aftermath of a zombie apocalypse. The client wants a darkened, contrasty image with cooled-down lighting but that keeps the hot highlights that don't dull the sparks flying from the ceiling.

Figure 15.7 The original grade of the zombie apocalypse

After the initial correction, the client wonders whether there's any way to make the lighting and sparks seem more impressive and also expresses concern about the visibility of the corpse in the foreground. This is the perfect time to try adding some flaring fill.

1 If your grading application supports third-party plug-ins, add the flare effect you want to use to your grade with whatever plug-ins you have.

   In this example I show the S_LensFlare plug-in from the GenArts Sapphire collection (GenArts' Sapphire is compatible with Baselight, Mistika, Nucoda, and Resolve).

2 Most lens flares start out by generating the most visible, obnoxious flare possible as the default setting. If possible, distract your client by pointing out something fascinating on the shelf opposite the grading display, and switch to a preset that's closer to what you really want. In the case of Sapphire, the S_LensFlare plug-in provides access to GenArts' FX Central preset browser, which lets you peruse a variety of lens flare presets consisting of scanned high-resolution lens elements from actual lenses (**Figure 15.8**). Choose a preset that comes close in terms of fill volume and color, knowing that you'll be customizing this more later.

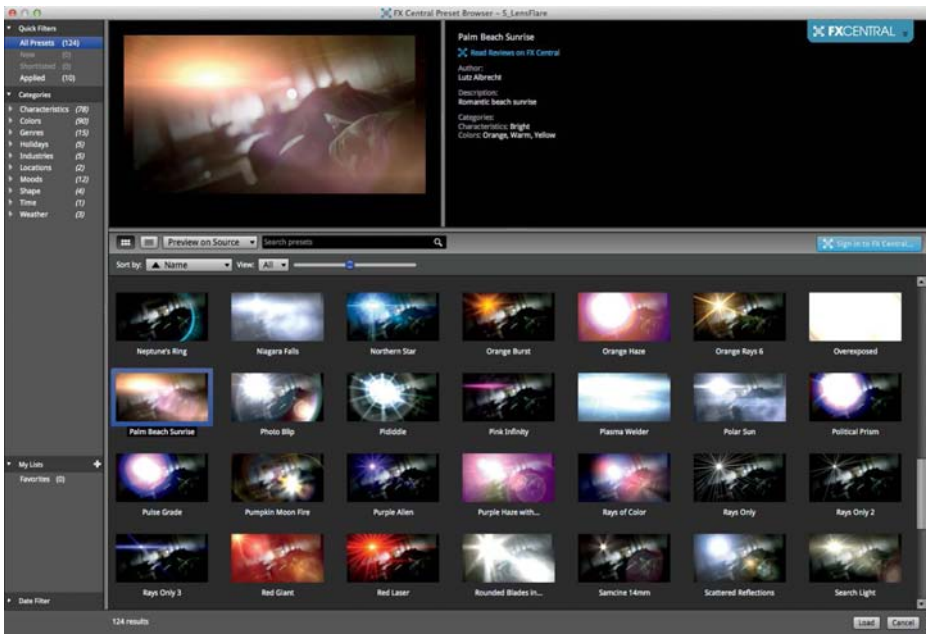


Figure 15.8 Flare presets available from GenArts' FX Central

3 Now that you have the type of lens flare you want, you'll need to fit the geometry of the flare to the part of the image you want to fill. Onscreen controls (as shown in DaVinci Resolve in **Figure 15.9**) let you position the center of the flare effect on the brightest emitting light source, the diameter of the flaring ring, and the angle at which the flaring elements fall off. Flaring typically cuts a diagonal through the center of the screen, but there are so many flaring variables that you could be forgiven for breaking the rules of physics in order to direct the flare where it'll do you the most good.

Figure 15.9 Onscreen flare controls in DaVinci Resolve enable you to adjust the position and angle of the flare.

4 Now that you have the type and shape of flare you want, it's time to make it a useful member of society by toning it down until it feels like it actually belongs in the shot. Editing whatever parameters are provided for the overall brightness and blur of the flare, diminish the flare's effect until it appears as a subtle fill that highlights details of the picture that you're interested in (**Figure 15.10**).

Figure 15.10 The final flare effect, providing a bit of crucial fill light for the scene

NOTE
If your grading application doesn't have a flare plug-in, this is also something you can add via a compositing application if you're willing to export a clip and process it elsewhere or within an editing application.

If necessary, you can further limit the flare's effect using another window or shape to keep the flare from diminishing any dark edge shadows you'd like to keep. The result is a subtle fill that highlights details you like, with interesting optical dynamics that give an added dimension to your grade. In addition to brightness and blur, you likely have controls for flare color, ray length and quality, and so on and so forth. GenArts in particular provides many controls, including atmospheric texture and flickering, that you can use to customize any blur to make it your own.

FAKING FLARING USING WINDOWS/SHAPES

If you don't have any lens flare plug-ins, you can easily fake the kind of veiling glare you get from a light source just outside of the lens by using windows to limit a simple lift adjustment. This technique ends up being similar to creating an artificial glow effect, except that you're applying it over a wide area rather than just the highlights.

The following example's starting point has a nice, soft lighting scheme coming from the golden-hour lighting at the end of the day (**Figure 15.11**). However, the client would like an even softer, lower-contrast treatment, since it's such a romantic moment. After gently resisting a suggestion to create a "pro mist" effect, you suggest a flaring effect instead.

Figure 15.11 The original grade

Create an oval or rectangular shape the width of the dominant light source in the image (in this case the sky); then feather it *a lot* so that it's soft, but ideally have it fall halfway down the feature it covers (in this case, halfway down their faces) so that it looks like flaring (**Figure 15.12**) and not like a badly made face-brightening window.

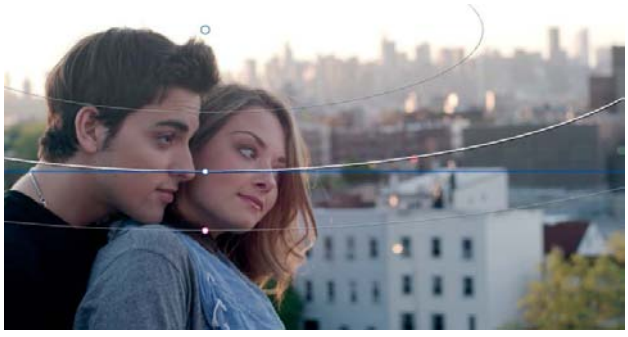


Figure 15.12 Placing a soft window/shape over where you want to introduce flare

With the window in place and feathered, simply raise the Lift contrast control, lowering image contrast while leaving the white point where it is until the image looks convincingly flared. If you want to throw in an added bonus, adjust the Lift color balance control to add warmth if you want the flare color to come from the lighting (**Figure 15.13**) or to cool the image if you want the flaring to reflect some kind of overenthusiastically applied lens coating.

Figure 15.13 The flare effect, created by raising the Lift contrast control and adding a bit of color via Lift color balance

Raising and tinting using the Lift controls, rather than Gamma or Gain, lets you add the necessary lightening without contaminating the highlights of the image, which can be valuable if you're trying to avoid blowing out the highlights.

For variety, there are other ways you can creatively apply flaring. In the following example, the same procedure is used to add flaring to the side of the woman's face as she stands in front of a diffuse white sky. However, using a custom shape lets you add soft, streaking highlights using a zigzag shape with soft points (**Figure 15.14**).

Figure 15.14 Creating a varied flaring using an irregular shape

Adding another, smaller shape on top of that one (**Figure 15.15**) lets you create a two-tone flare, with blue added via the Lift color balance control in a first adjustment, and a reddish-magenta added to the smaller inner shape above that in the second adjustment.

Figure 15.15 Adding a second level of colored flare via a second, overlapping shape

With both of these variations, you end up with a more dynamic flare (**Figure 15.16**).

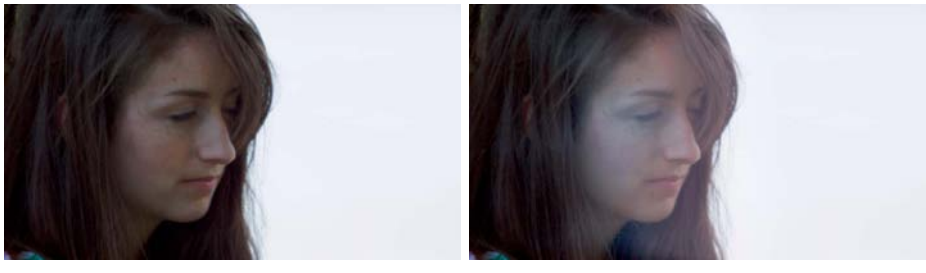


Figure 15.16 Before (left) and after (right) this two-tone flare effect

These are artificial techniques for distressing the image in a creative way; they won't be appropriate for every project, but they're good to know when you need to find a more creative way of building a low-contrast, light-drenched look.

MINIMIZING FLARING

The other side of the coin is when you have an image with actual flaring in it and the client wants you to get rid of it. As you can see in **Figure 15.17**, flare is basically a low-contrast region of the image, in this case a light spill from the window affecting the left third of the image, which you can see by the lightening of the woman's hair and face.

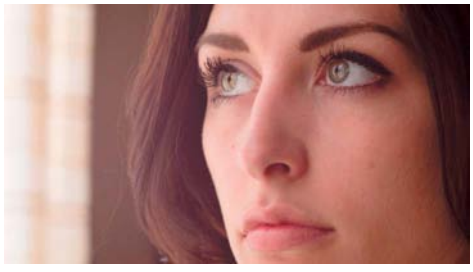


Figure 15.17 The original shot. Flaring from the window is reducing contrast.

The fix for this, if you want to get rid of the flare, is to selectively increase contrast in just the region of the image being affected by flare. In this case you'd add a simple gradient or rectangular window/shape to the left third of the image and then drop the Lift contrast control and raise the Gain contrast control (or adjust the Contrast and Pivot controls, if available) to raise contrast and set the black point of the flared region of the picture to match the black point of the unflared region (**Figure 15.18**).

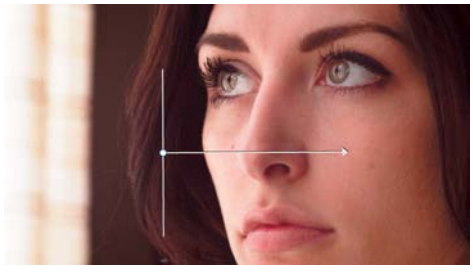


Figure 15.18 Using a gradient window/shape to feather in a contrast expansion to counteract the flaring in the shot

Bear in mind, if you're dealing with excessive flaring, this technique will only minimize the flaring, but it won't eliminate it. In the following example, the flaring is so extreme that although contrast can be increased and the color corrected (in this case, the contrast must be stretched so far that the color becomes oversaturated, specifically in the yellows), it's difficult to eliminate all of the flaring and still

create a natural-looking image that matches the rest of the shots in that scene. One technique that can help is to use multiple overlapping windows to alter contrast in selective ways (**Figure 15.19**).

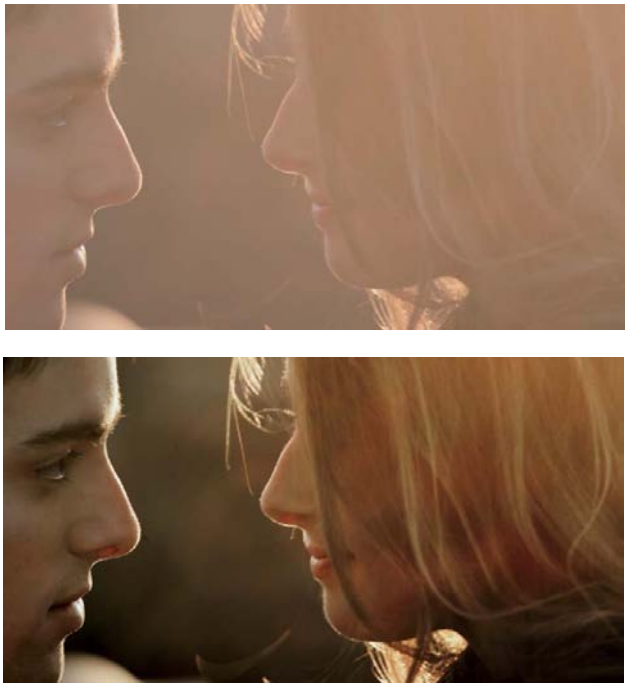


Figure 15.19 Two overlapping windows are used to increase image contrast to reduce the effect of flaring.

The technique for removing flare is similar to that for minimizing glare and airlight in long shots and landscapes.

CHAPTER 16

LIGHT LEAKS AND COLOR BLEEDS

Instead of trying to reproduce exactly what I see before me, I make an arbitrary use of color to express myself more forcefully.

—Vincent Van Gogh (1853–1890)

Many years ago, a truly talented photographer friend of mine named Diana mentioned that she'd always wanted a *Diana camera*. Being a filmmaker working in post I had no idea what that was, so I checked eBay, and, sure enough, there were a handful of plastic Diana cameras available. When I received it, I was amazed at the simplicity of this cheaply made, boxy camera with its plastic lens and all-manual operation. Around that same time, another friend of mine purchased a Holga, embarking on an exploration of deliberately low-fidelity photography that capitalized on the light leaks, vignetting, edge blur, chromatic aberration, and distorted film handling that resulted from these plastic cameras with their plastic lenses (**Figure 16.1**). Fast-forward 15 years, and companies like Lomography are making a business of selling cameras that, by design, can't help but introduce these deliberate and creative faults into the image.

Figure 16.1 Photos taken with Holga cameras (courtesy Joe Reifer).

However, it's not just plastic camera enthusiasts who've been finding ways to introduce creative faults into their images. These days, when some client wanders into your grading suite and asks whether you can create an "Instagram look," chances are they're referring to one of the more extreme digital filters that Instagram made available such as Lomo-Fi, Lo-Fi, Gotham (no longer available), and Poprocket (no longer available). The hallmark of Poprocket, in particular, was the simulation of light leaks and bleeding colors that make those plastic cameras so interesting. Fortunately, digital grading applications make it possible to indulge in the creation of this type of look.

When building a "leaking light" look, keep the following in mind:

- The Holga and Diana cameras have plastic lenses with uncertain edge focus.
- The construction of the film advance mechanism introduces irregular vignetting.
- Poor construction of the camera case introduces light leaks at the seam of the rear film door, allowing light to come in around the sprocket holes, which causes irregular film layer exposure.

Additionally, enthusiasts of deliberately "lo-fi" plastic camera photography also tend to indulge in the use of irregular film stocks such as LomoChrome Purple, advertised as an "awesome color negative film which gives naturally infrared results!" Additional ways of extracting more chaos from one's color include developing procedures such as cross-processing (a look that's described in Chapter 5).

When creating this sort of look, there is no one procedure that will work equally well for every image, and in fact you may notice that light-leak looks you create for one scene don't necessarily translate well to other scenes, since the interactions between your "leak" adjustments and the available range of color and contrast in each image will be different.

TOY CAMERA EFFECTS AND ASPECT RATIOS

One thing to keep in mind is that the photo systems whose effects we're mimicking don't usually employ the 16:9 or 1.85:1 aspect ratio used by video and film. Typically they produce images that are 2:3 or even 1:1 (square). If you really want to mimic the photographic look, you can crop your images and accept some pillarboxing, but in this section I'm assuming you'll want to stick with a full-screen treatment of the image, which is clearly cheating.

LIGHTER "DIANA CAMERA" LOOKS

To begin with, we'll look at two fairly simple takes on the "toy camera" look that I've adapted from a collection of sample images on the Web (search for *Diana camera photography*, and you'll find an abundance of reference images showing a wide

variety of vignettes and light leaks). In general, I've found that the best way to introduce organic-seeming light leaks is to use multiple overlapping shapes. The more shapes you add, the longer the grade will take to create, but the more natural the light leak will seem.

For the start of this look, we'll create a pleasingly vintage look for the image by pushing the overall Offset color balance control toward orange-yellow, giving a somewhat chocolate tone to the image. At the same time, adding a slight S curve to the luma-only curve to gently boost contrast and raising saturation by 20 percent gives us an interestingly warm and colorful image to start with (**Figure 16.2**).

Figure 16.2 Applying a vintage tone to the image to begin

This serves as the base of our image. Now, by adding another node or layer to the grade, we'll begin creating a light leak. For this image, we'll assume that light is leaking from the top and bottom of the back camera cover thanks to fatigued light-blocking foam, so we can make the first leak with a custom shape (for introducing subtle variation) or rectangular shape (for a straight leak), isolating the top and bottom of the image with narrow feathering. This accomplished, we can now use the Offset control to push these strips of the image toward a reddish-orange leakiness. Using Offset introduces color throughout the full tonal range of the image, adding this color to the darkest intersecting shadows of the image to wash them out, which is what you want (**Figure 16.3**).

Figure 16.3 Adding reddish light leaks along the top and bottom of the image

With that accomplished, add another node or layer, and isolate the corners and sides of the frame with another well-feathered custom shape or oval. Custom shapes are more ideal because you can "sculpt" them for a more organic, random look. And don't worry if it takes a lot of futzing to make a shape that looks random; that's part of the process. Once the shape looks pretty good, use the Offset control to add another tint, this time toward green-cyan. Once you've added the tint, you'll no doubt want to readjust the shape to look more random. Ideally, you don't want an equal amount of tint hitting each side and corner; you want variation that is readily apparent (**Figure 16.4**).

Figure 16.4 Overlapping some light-leak interactions along the sides

Now you have a nice-looking amount of leak coming in, and it would be fair to stop here, but there's more you can do if you want to really distress the image. Assuming some kind of massive internal flaring because of a faulty lens system, adding a third node or layer with yet another custom shape—this time drawn as a jagged *W* with a fairly sharp edge on one side and a softly feathered edge on the other—sets us up for the following adjustment: raising the Offset contrast control *slightly* and pushing the Offset color balance just a little bit toward yellow-green. With this slight color streaking through the middle of the image, you now have a three-color leak that overlaps in interesting ways. To finish the look, add one more node or layer with a round, centered window/shape, feather and resize it so it's the full height of the image, and add some gentle blurring to emulate the crappiness of the plastic lens (**Figure 16.5**).

Figure 16.5 One more overlapping flaw, just for kicks

After you've built up your overlapping leaks, it's a good time to readjust the various windows/shapes you've created to make sure that the overall effect looks convincingly random and natural and that the colors splash within convenient areas of the image and don't overlap things the client wants relatively untouched. As you build these kinds of light-leak adjustments, remember that asymmetry can be your friend.

A second example shows the same sort of setup used in a different way. This grade also uses three overlapping corrections, but this time they're redrawn so that the red leak is irregular and streaks in primarily from top left and bottom right and so that the blue-green vignetting leak is feathered much more heavily into the image. The third overlapping correction is a darkening vignette that hits the four corners of the image, feathering in irregularly to blend with the blue-green leak, and this corner darkening adds another element to the mix (**Figure 16.6**).

TIP

For mid-image streaks such as the one shown in the last part of this grade, it doesn't hurt to place them so that you can see a clear border in order to accentuate the streak's existence (assuming the client doesn't mind a discoloration right over the talent's face, that is).

Figure 16.6 Before (left) and after (right) applying the Diana camera look

However you build this sort of look, keep in mind that all the flaring you add is built upon the base primary correction that sets the tone for the overall look. Mixing and matching different base grades with various overlapping light-leak layers can provide innumerable looks.

ANIMATING FAKE LIGHT LEAKS

Of course, when you first build a grade of this type, the leaks are static. Depending on the scene and what you're doing, a static treatment of this type may be fine. However, if you want to add a bit of life to the grade, you can do one of two things.

- Animate the intensity of each leak's color balance and exposure boost.
- Animate the shape of each leak so that it stretches out and contracts in over time.

Of the two, animating the shape of a leak is a bit trickier and can require more work. My advice is to stick with slow, alternating changes to a leak. Unless you have a method of quickly building randomized, procedural animation, creating truly random-looking keyframed motion can be tricky to do well and will definitely prove time-consuming. For reference, you should check out the motion of longer light-leak stock clips to see the type of motion that viewers would expect.

HEAVIER "HOLGA CAMERA" LOOKS

To start building a Holga-type look, use one of the techniques described in Chapter 5, "Cross-Processing Looks," to create a base image that has the overall tone you want (**Figure 16.7**), keeping in mind how you want skin tone to appear, how much or how little contrast you want to add, and how saturated you want the final result to be. Given the myriad ways of abusing these plastic cameras and the chemistry with which the images are developed, you can really do whatever you like, although the majority of images I see tend toward either yellow/orange or red/orange midtone tints, with more neutral highlights.

Figure 16.7 The cross-processed base image to which we'll apply a Holga-type look

Next, build up a set of two or three layered, hand-drawn windows/shapes, one on top of another. You'll use each of these shapes to create an additional layer of tint, as if irregular light leak were streaking onto the negative. In **Figure 16.8**, three layers are used, the first (far left) to add some red bleed from the lower-left corner, the second (middle, actually an intersection of two drawn windows) to create a halo of blue halation, and the third (right) to create a streaky wedge of yellow/white overexposure at the center of the blue halation.

If you really want to get tricky, introduce the coloration within each "bleed" layer via nonlinear adjustments to your application's curves; in this example, curves are used to add more red to the highlights than to the shadows of the affected area and to subtract blue from the same region.

Figure 16.8 The base image with (from top) one, then two, then three layers applied

Ideally, set up these layers in such a way so that you can use the Screen or Overlay blending modes to combine their effects with the original image. In **Figure 16.9**, the Layer Mixer in DaVinci Resolve is used to combine the "leak" layers (nodes 2 and 3) with the base layer (node 1).

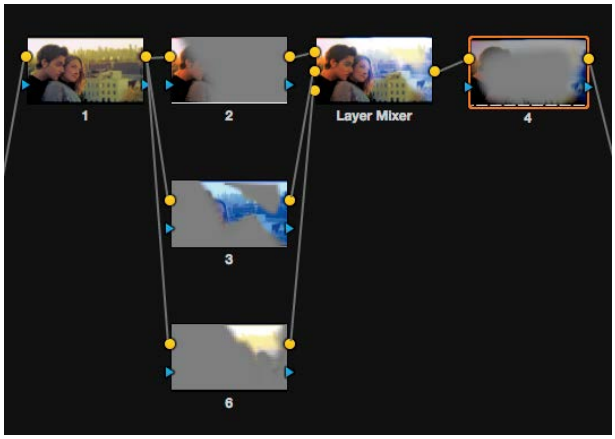


Figure 16.9 Blending the light bleed adjustments together using a blending mode via the Layer Mixer in DaVinci Resolve

NOTE

If your grading application doesn't support composite modes, you can achieve similar effects simply by making more careful adjustments to the Lift/Gamma/Gain/Offset controls. However, the use of composite modes can get you faster results and more unexpected interactions among layers.

Other applications, such as Baselight, let you add shape-limited adjustments via additional layers, each of which you can blend into your grade using composite modes applied to each layer.

Which composite mode works best depends on how extreme a leak you want to create. In my experience, two modes work well for this effect.

- **Screen:** Provides the most gentle color interactions among the tinted leak layers and the base grade layer; also provides the most balanced tints applied to both the highlights and shadows of the image
- **Overlay:** Nicely tints the highlights but preserves shadow detail better, preventing the washed-out shadow tinges that the Screen and Add modes apply

To seal the look, apply another irregularly drawn edge vignette around the frame, feather it even more irregularly, and then use it to drop the image lightness around two or more edges of the image (**Figure 16.10**). Making these adjustments after adding the light-leak layers ensures that the edge darkening you're introducing won't wash out with any further changes you make to the other light-leak layers.

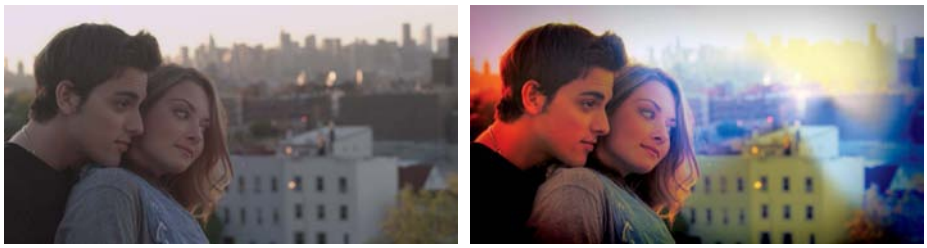


Figure 16.10 Before (left) and after (right) applying the heavy Holga look

This grading concept can be used in a variety of ways, with more or fewer layers shaped differently to interact with the content of any given scene, to create a multitude of looks (**Figure 16.11**).

Figure 16.11 Three examples of different light-leak gags applied to various images

Keep in mind that any application of saved versions of this effect will likely require extensive customization to work with the unique range of color and contrast of each new scene. However, the idea is the same in each application: multiple broadly overlapping and irregularly shaped tints, with an erratic vignette around the edges.

ADDING LIGHT LEAKS USING COMPOSITE MODES AND STOCK CLIPS

Another, more immediately dynamic way of adding light leaks to a project is to use stock video light leaks and composite them into your project (**Figure 16.12**). This is identical to the technique of adding scanned or pregenerated film grain or textural elements to an image shown previously. When you go this route, you automatically inherit the motion and texture of the imported element, so this is a much easier method to use when you want a fast-moving, dynamic effect.

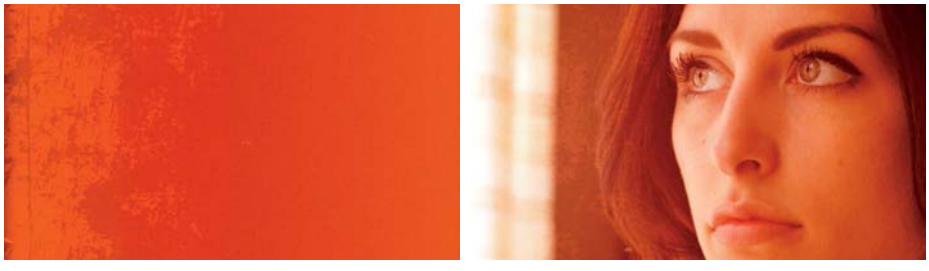


Figure 16.12 The Film_crazes light-leak clip from Warren Eagles and FXPHD's Scratch FX (left), shown composited over a clip (right)

However, animated light leaks can be pretty distracting, and a little can go a long way. In particular, you may find that the method of superimposing light-leak layers on the timeline works best, in that it lets fade them in and out exactly where you want them and place them at the most appropriate moments of your program (transitions, key moments). In the following example shown in Autodesk Smoke,

two instances of the Fogging_3 clip (provided courtesy of Warren Eagles Scratch Effects) are superimposed over cut points in a movie trailer and composited using the Max/Lighten mode using an Axis effect with transitions to fade them in and out before and after each cut (**Figure 16.13**).

Figure 16.13 Stock video light-leak elements superimposed on the Smoke timeline.

The result is a fogging that accompanies these two cuts, adding additional visual dynamics to the edit (**Figure 16.14**).

Figure 16.14 A composited light leak at a transition

As you introduce these sorts of elements, don't be afraid to grade and alter them so they fit your media better. A light-leak layer that may be unbearable at 100 percent opacity may blend seamlessly at 50 percent.

STOCK LIGHT LEAKS

Many of the same companies that sell stock footage of film grain and distressed elements sell footage of light leaks. At the time of this writing, Creative Dojo (http://creativedojo.net) provides a free light leaks package that you can download to experiment with this technique. Also, motionvfx (http://motionvfx.com) has a collection of 2K light leaks.

CHAPTER 17

MONITOR AND SCREEN GLOW

When someone is sitting near a computer display or a television, the monitor often serves as a light source, casting a soft, cool light on the subject.

The distinctive blue glow of a computer monitor or television is caused by the cooler color temperature that these devices employ relative to the tungsten lighting frequently used in most homes. Computer monitors are typically set to 6500K, whereas televisions may be set to 7100K or even 9300K (in Asia). According to the relative scale of color temperature for lighting sources, tungsten household lighting is around 2800K, and tungsten set lighting is around 3200K. In an environment with mixed lighting, the average television is going to appear quite a bit bluer.

The reference photograph in **Figure 17.1** shows a subject (me) illuminated by fill light from a digital media device. The soft highlights that result are definitely on the cool blue portion of the spectrum, relative to the lighting throughout the rest of the scene.

Figure 17.1 The author in a rare moment of repose, enjoying the latest in digital media, bathed in the soft glow of digital display lighting

Set lighting doesn't always account for this effect when two actors are shown sitting in front of a monitor. Perhaps the other lighting instruments are overpowering the practical light coming from the monitors. Or maybe the monitors are set up

with tracking markers in preparation for being completely replaced by a composited image and so they aren't turned on at all.

Depending on the aesthetic of your project, you may find you need to simulate this glow to "sell" the audience on the idea that the actors are sitting in front of a working monitor.

CREATING MONITOR GLOW

Keep in mind that the glow of a digital or analog display usually overpowers the other lighting on a set only when the ambient light level is low. For that reason, your overall primary grade should probably be of subdued brightness if you're creating this effect.

Although adding more blue to the highlights using the Gain color balance control may seem like an easy solution, the result will probably add more cool blue light throughout the image than you want. Light from a television or display is relatively soft, falling off quickly the farther it travels from the source. To simulate this quality, you want to add only a bit of color to the brightest highlights of whatever's closest to the monitor, adjusting the tolerance controls for a smooth, gradual falloff through the midtones of the image (**Figure 17.2**).

Figure 17.2 Keying the brightest highlights (with soft falloff/tolerance) using Luma qualification in order to add a cool glow from the television

How much or how little blue you add to either the whites or the mids depends on how extreme a cast you want to create, which is going to be relative to your stylistic goals and informed by the size and intensity of the display you're trying to simulate.

The example in Figure 17.2 was relatively easy, because the lighting supported a glow coming from the direction of the monitor that was quick to isolate with a luma key. If the on-set lighting isn't so accommodating, you might have to use a secondary correction limited by shapes/Power Windows to create a similar effect, possibly combined with additional Luma qualification.

CHAPTER 18

MONOCHROME LOOKS

Color television! Bah, I won't believe it until I see it in black and white.
—Samuel Goldwyn (1879–1974)

While nearly all video you're likely to work with is shot in full color (a notable exception being the RED monochrome camera), it might be necessary for you to strip out a clip's color to create a monochrome or grayscale effect for a more filmic, artistic, or fashion-oriented look.

SIMPLE DESATURATION

You can create a monochrome image quickly and simply by dropping the Saturation parameter to 0, leaving you with an image comprised of the luma channel only. After desaturating the image, you can adjust the contrast of the resulting monochrome image using curves and Lift/Gamma/Gain controls to create a variety of looks.

While these sorts of contrast adjustments can provide a lot of variety, they don't really allow you to be very selective about changing the lightness of specific aspects of the image. This is because the Luma channel of a video image is normally calculated a single way: by adding together 0.2126 of the red channel, 0.7152 of the green channel, and 0.0722 of the blue channel. An ordinary desaturated image results from adding together *some* of the red, *a lot* of the green, and *a bit* of the blue channels.

These ratios are the standard employed by the video engineering community to electronically emulate how the human eye perceives the luminance of a scene. While this is all well and good for creating video standards for luma and chroma encoding, if you want to be even more creative when building monochrome looks, you need to use your own ratios of the red, green, and blue channels to create a customized monochrome mix for artistic purposes.

THE LUMA OF STANDARD-DEFINITION IMAGES IS DIFFERENT

It's worth noting that standard-definition video uses different math to extract a luma channel, by adding together 0.299 of the red channel, 0.587 of the green channel, and 0.114 of the blue channel.

MANIPULATION OF BLACK-AND-WHITE PHOTOGRAPHY

Photographers have been manipulating images in this way for years by exposing black-and-white film using different types of film stocks with different colored filters, effectively excluding specific frequencies of light from exposing the film in order to manipulate contrast and the brightness of specific subjects by changing the proportions of the colors in a scene that comprise the final exposure.

Black-and-white stocks come in four types.

NOTE

A Wratten 44 cyan filter renders any black and white panchromatic stock orthochromatic.

- **Orthochromatic** film stocks, which were used in the early days of silent cinema, are sensitive only to wavelengths of light from blue to green. These stocks make blue objects appear lighter and red objects (such as skin tone) appear darker, as seen by the simulation in **Figure 18.1**.
- **Panchromatic** film stocks are equally sensitive to wavelengths across the visible spectrum, including red, green, and blue light.
- **Orthopanchromatic** film stocks are sensitive to all visible wavelengths, with less sensitivity to the reds (yielding darker skin tones).
- **Superpanchromatic** film stocks are sensitive to all visible wavelengths, with heightened sensitivity to the reds (yielding lighter skin tones).

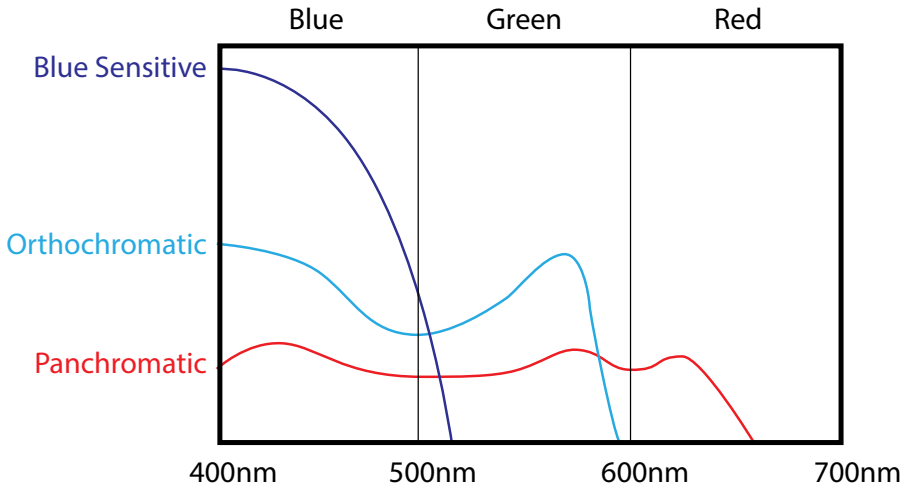


Figure 18.1 A graph showing the sensitivities of orthochromatic and panchromatic film. Data source: "Gasic Sensitometry and Characteristics of Film," Eastman Kodak.

This means the same image, shot via film stocks with different sensitivity, will have a different appearance.

When shooting with black-and-white stocks, photographers and cinematographers have learned to use optical filtration to emphasize some colors while diminishing others, effectively lightening some subjects while darkening others.

Stan Sholik and Ron Eggers' *Photographer's Filter Handbook* (Amherst Media, 2002) lists filters that are useful for black-and-white photography and the effects they have. Here is a summary useful for your own work. There's also a useful chart with this information on Wikipedia, sourced from Eastman Kodak, Tiffen, and Wratten (the latter two companies being manufacturers of photographic filters [http://wikipedia.org/wiki/Wratten_number]).

- **Yellow (Wratten 8):** Darkens skies, cuts haze by reducing blue airlight and other scattering of blue light
- **Yellow-Green (Wratten 13):** Darkens skies, lightens foliage, renders the most balanced skin tone for lighter complexions
- **Deep-Yellow (Wratten 15):** Darkens skies and water
- **Orange, Light Red (Wratten 21, Wratten 23a):** Dramatically darkens skies, renders lightened skin tones
- **Light Red (Wratten 23A):** Dramatically darkens skies and water; inadvisable for skin tone as the lips and skin blend together
- **Magenta (Wratten 33):** Darkens foliage, lightens sky
- **Cyan (Wratten 44a):** Lightens water, sky, and foliage; darkens sunsets and skin tones
- **Dark Blue (Wratten 47):** Accentuates haze by boosting blue airlight; lightens water, darkens foliage, darkens skin tone
- **Dark Green (Wratten 58):** Darkens sky, dramatically lightens foliage, renders dark and rugged skin tones
- **Red-Green (Wratten 23+ Wratten 58):** In conjunction with slight underexposure, helps create monochrome day-for-night effects

When adapting these filtration techniques for digital use, keep in mind that all these filters do is let some hues pass and block others. A good rule of thumb to follow when making color channel adjustments to mimic these effects is that the ultimate effect of a filter is to lighten the hues in the image corresponding to the color of the filter and darken hues in the image that don't correspond.

CUSTOM MONOCHROME USING A CHANNEL OR RGB MIXER

With a little work, you can build monochrome grades that mirror these film stock and filtration effects, or you can create your own custom color channel mixes, in the process enhancing skin tones, environmental features, highlights, and shadow detail.

Many grading applications have some sort of mechanism for mixing different proportions of color channels together to create a monochrome image, similar to Adobe Photoshop's time-tested channel mixer. DaVinci Resolve has an RGB Mixer (**Figure 18.2**) that can be set to a Monochrome mode in order to create custom mixes of the red, green, and blue channels for a grayscale result.

Figure 18.2 The RGB Mixer in DaVinci Resolve

However the UI is organized, channel or RGB mixers work by splitting apart the individual red, green, and blue components of an image and then adding them together as a single channel. This is the same as the process of superimposing three layers on a timeline and using an Add composite or blending mode to combine them into a single image.

When using a channel or RGB mixer to create custom grayscale effects, an examination of the three color channels of your image makes it immediately apparent that specific regions of the image have radically different luminance levels in each color channel (**Figure 18.3**).

Figure 18.3 Left to right: the red, green, and blue channels isolated

For example, the red channel presents the lightest and smoothest skin tones, while the green channel shows the darkest lipstick. The blue channel, on the other hand, has the most contrast and the darkest skin tone.

With this in mind, you can start to see how creating a custom mix of color channels, specific to a particular image, can result in the most effective black-and-white effect for your purposes.

SPLITTING (RATHER THAN MIXING) COLOR CHANNELS

If your grading application lacks a channel mixer, you may be able to achieve the same result via whatever mechanism your application might have for splitting each color channel apart into separate nodes, layers, or image streams. Once split, you can grade each individual channel to raise or lower its strength. The key, when using this method, is to use a transfer or composite mode to the channels back together at the end. You don't want to reassemble them as individual color components; you want to actually combine them with an add operation.

CUSTOM MONOCHROME USING LAYERED OPERATIONS

If you're working with a layer-based application, another way you can accomplish a customized monochrome mix is to first tint the image and then desaturate the result. The first correction uses the Gain color balance control of a video grade to tint the image by whatever color will give you the best mix of color channels for your purposes.

Using the second layer, you then desaturate the tinted result of layer 1. Since you're desaturating remixed color channel levels, you can alter the resulting lightness of different elements of the picture by changing the tint in layer 1.

This technique does not always let you make changes as dramatic as that accomplished using a true channel mixer, and how it works is heavily dependent on the image math used by your particular grading application, but it does allow for significant customization of a monochrome effect.

DIFFERENT CUSTOM MONOCHROME EFFECTS

Now that you know how to extract individual color channels from an image, it's a simple thing to choose which color channels you want to use to create your own monochrome image and blend them together to create the best mix. Keep in mind that, even though you're creating a monochrome look, you still need to

apply an initial primary grade to the image, setting appropriate contrast and color for the scene. Since this monochrome technique draws from the state of the color channels, the better you make your image in a first operation, the better your monochrome image will look in the second operation described here.

For example, if you want to simulate an orthochromatic film stock, you can simply set the red channel to 0 and then set the green and blue channels to 50 percent each. Technically, you could set the blue channel to be a bit stronger, according to an eyeball reading of Kodak's sensitivity chart (search the Web for *basic sensitometry and characteristics of film*) (**Figure 18.4**).

Figure 18.4 Left to right: luma channel only, panchromatic simulation, orthochromatic simulation

A panchromatic film stock could then be simulated by setting the red, green, and blue channels to 33 percent each so that each contributes equally to the resulting monochrome image. Again, if you want to be technical about it, for daylight scenes the blue channel should contribute a bit more than the green and red channels. For indoor scenes lit by tungsten lighting, the blue channel should be stronger, and the red channel should be weaker than the green channel, according to the same sensitivity chart published by Kodak.

A common filter used by black-and-white portrait photographers is a yellow-green Wratten 13 filter, which you can simulate by emphasizing the red and green channels while lowering the blue channel. This tends to render pleasing tonality for subjects with light-skinned complexions (**Figure 18.5**).

Figure 18.5 Even though the skin tones are very light, no detail is blown out. This is simply the result of adding more red and green than blue.

If you're using this technique to lighten skin tones by adding a greater mix of red to the image, be careful you don't wash out the lips. Typical makeup treatments emphasize darker lips, so you may find yourself mixing in more green to make up for this (the additional mix of green serves to darken the lips).

If you have a character to whom you want to give a rugged complexion, then emulating the dark green Wratten 58 filter by boosting the green channel, along with perhaps a small touch of the blue channel, will produce a swarthy skin tone that should look right at home in the old west (**Figure 18.6**).

Figure 18.6 Mixing more green than red and blue gives darker skin tones.

There's no "right" proportion; it's all a matter of preference, depending heavily upon the subject. For example, a look I've grown fond of, though it's difficult to find appropriate times to use it, is to leave the red and green channels at the default SMPTE luma settings but to then boost the blue channel until the complexion appears quite dark, which I associate with the deep tans of the old Bain de Soleil advertisements of my youth. This will be effective only on images that don't have an excessively noisy blue channel, but when it works, it's kind of cool (**Figure 18.7**).

Figure 18.7 Adding more blue, less green, and diminishing red yields the darkest, most bronzed skin tones of all.

And that's my final point. Digital grading makes it easy to mix and match color channels in whatever proportions you like, given the scene at hand. Furthermore, there's nothing wrong with simply picking a single color channel to use if there's one that happens to look perfect.

And don't stop with your channel-mixing operation. Once that's finished, you might choose to make perhaps one last contrast adjustment, using curves or contrast controls to refine the overall tonality of the image. If you have more specific aspects of the image you'd like to address, don't forget that you can use the HSL qualifier set to luma-only to isolate a range of image tonality for specific

adjustment. Or, you can pull a chroma qualification off the previously colorful state of the image and create an isolation that way. Or, you can go back to the previous primary grade you applied to the color of the image and get tricky by adjusting the contrast of the individual color channels prior to their conversion to grayscale. The combinations are limited only by your imagination.

BEWARE THE BLUE CHANNEL

A variety of cameras that write to compressed formats produce an exceptionally noisy blue channel. If this is the case with the footage you're grading, mixing a disproportionate amount of the blue channel into your monochrome mix can add more noise than you probably want (**Figure 18.8**), necessitating noise reduction of some kind to improve the result.

Figure 18.8 Too much noise in the blue channel

CHAPTER 19

SHARPENING

Sharpening, like blur, is a convolution filtering operation. Found in pretty much every editing, compositing, and grading application, sharpening generally works by increasing the contrast of specific combinations of adjacent pixels in order to exaggerate detail in the shot. Sharpening doesn't actually add new information; it simply makes it easier to discern what information there is.

Used effectively, sharpening can increase the definition of subjects within the frame, add a gritty texture to a shot you want to punch up, or make subtle soft-focus issues less of a problem. However, not all sharpening filters are created equal, and at their worst, sharpening can exaggerate noise, cause ringing around edges, introduce unwanted high-frequency moiré patterns, and bring out compression artifacts that you'd rather leave hidden. As a result, keep an eagle eye on image quality whenever you employ this operation.

Here's something to keep in mind: Sharpening is essentially a highly localized contrast operation that operates throughout the image. Like contrast, sharpening is something that's easier to increase more and more in the moment, and you're likely to think it looks better and better. That's fine, but I recommend playing through a clip you've added sharpening to before you make a final decision; sharpened clips often look better paused than they do in motion.

Also, if you've added a ton of sharpening to a particular shot because the client was really into it, but you're unsure whether you've gone overboard, make a point of revisiting that shot later, once it's been forgotten about. You and your client's first impression of the shot at that point may be a much more accurate indicator of how good it really looks.

SHARPENING TO ADD GRIT

One way to use sharpening is creatively, to add a bit of harshness to a scene by emphasizing image detail that we ordinarily try to disguise, such as pores on the face, freckles, whisker growth, and stray hairs. Environmentally, sharpening will emphasize grain and noise, and fine textures such as rust, gravel, foliage, and other high-contrast detail in the image.

In the following example, sharpening the overall image emphasizes the texture of the man's face, the diamond grating to the right of the image, and the irregular layers of paint in the foreground bars of the jail cell (**Figure 19.1**).

Figure 19.1 A bit of sharpening enhances harsher textural details in his face and in the background.

The result is a harsher look to the scene, which is less flattering to the actor but a better indicator of the character's frame of mind, without the need to adjust any aspect of color or contrast other than what we've already accomplished in the primary grade.

Another use of this type of exaggeration of texture is to isolate a particular feature of a shot to roughen up, without affecting the rest of the scene. In the example in **Figure 19.2**, we want to give the orange chair that the woman to the left is sitting in a more faded, threadbare appearance. Since the actual couch is quite nice, we'll use sharpening to emphasize its flaws; however, we don't want to emphasize flaws within the two women in the scene, so we need to be selective about the adjustment.

Figure 19.2 Using sharpening and desaturation with HSL Qualification to give a rough, threadbare look to the orange chair, without affecting the rest of the scene

Using HSL Qualification, we carefully isolate the orange chair, desaturating it and simultaneously adding sharpening. The result is every bit as distressing as we want. The same technique can emphasize all manner of textured detail within costume elements, scenic details, and props.

SHARPEN TO FIX SOFT FOCUS

Another common use of sharpening—although the results are hardly guaranteed—is as a remedy for soft focus. In an era of high-definition and digital cinematography, I increasingly encounter soft focus in the lower-budgeted (and time-limited) programs that I work on. Often, these issues come as a complete surprise to the client, since up until I get it, the program has been viewed exclusively on a 24" (at most) monitor, which makes all but the most egregious soft-focus shots nearly impossible to spot.

However, once I load a program on the projector in my client suite, seemingly indiscernible soft-focus issues suddenly become clear as day, and the very next question I get is, "What can you do about it?"

The honest answer is, nothing. There is no mathematic operation I'm aware of that can put an out-of-focus shot into actual focus. However, *if you're very lucky*, a bit of sharpening can provide enough of an *illusion* of focus to make the difference between a problem that will distract the audience and one that nobody will notice.

The chief determining factor governing whether you can get away with this is the severity of the soft focus. In the following example, focus was just slightly off. Even in print, the problem doesn't necessarily look bad, but on the big screen, the image in **Figure 19.3** looks visibly soft. In this case, adding a bit of sharpening worked like a charm to make the text on the Post-it Note much more readable. If we really wanted to hone the audience's perception, we might even use a shape/Power Window to target the sharpening just on the Post-it Note.

Figure 19.3 Applying sharpening to the overall image to minimize the undesirable effects of soft focus

Looking at another example in **Figure 19.4**, the man's close-up is also noticeably soft. Again, it's subtle on the page, but on the big screen there is the distinct sensation that your eyes are working too hard to resolve the image—not what you want the audience to be experiencing. However, in this case the shot has a deliberately shallow depth of field, and we don't want to sharpen *everything* as that might create texture where there should be none.

The other issue is that, as mentioned earlier, sharpening exaggerates noise and grain. As a result, adding too much sharpening throughout the image, or even to the man's entire face, might result in a distractingly increased amount of noise, which is never pleasant.

To get around both of these potential problems, we'll take advantage of a maxim that cinematographers have lived by for years, which is that you always focus the lens on a subject's eyes. Even if the rest of the face is just out of focus, the eyes should be sharp. So, using a well-feathered oval shape/Power Window, we isolate the region around the eyes, adding sharpening within.

Figure 19.4 Using an oval shape/Power Window to add sharpening just to the actor's eyes, minimizing noise exaggeration and preserving the soft focus elsewhere in the scene

In the example in Figure 19.4, the bridge of the man's nose is also being sharpened, whereas true optical focus would have the eyes and eyelids in focus, but the nose somewhat softer since it's past the focal plane. However, we can probably get away with the current treatment in this shot because the greater purpose of creating comfortable viewer focus on the man's face is being served.

Another strategy would be to use the Luma qualifier to key the darkest parts of the image, including the eyelids and irises, eyebrows, hair, beard, and facial shadows. With this accomplished, you can now apply sharpen only to these regions of obvious detail throughout the image (**Figure 19.5**).

Figure 19.5 Adding sharpening to only the shadow detail of the image using a Luma qualifier. The result adds sharpening throughout the image.

A consequence of this second method is that we lose a bit of the shallow depth of field appearance on the face, but we gain additional sharper detail throughout the image, which might be more desirable as long as it looks natural.

Which approach you take—overall sharpening, vignetted sharpening, or keyed sharpening—depends entirely on the image; there's no single way that will work for every situation. The thing you want to keep in mind is the trade-off between undesirable softness and the introduction of a too obviously artificial look. Also, if you're limiting the region being sharpened, you want to make sure that the transition from the unsharpened to the sharpened portions of the image doesn't look obviously unnatural. Sharpening filters in grading applications, no matter how sophisticated the algorithm driving them, usually have a relatively simple user interface. In some applications, a single parameter adjusts the degree of sharpening. Other applications' sharpening filters provide "unsharp mask" functionality, and one or two additional parameters let you customize the effect.

SHARPENING IN DAVINCI RESOLVE

In DaVinci Resolve, sharpening is available in the Blur tab of the Color page. Selecting the Sharpen radio button and lowering the Radius parameter increases the range of pixels that are calculated to create a sharpening effect (raising this parameter instead creates a blur effect). A smaller radius results in broader areas of the image being sharpened in thick strokes, while a larger radius (up to 50) restricts sharpening to areas of finer detail.

A separate Scaling parameter increases or decreases the sharpening effect at any particular radius. Scaling defaults to a value of 25 (out of 100), which is why turning down the Radius parameter automatically results in a sharpening effect happening. For a typical shot, dialing down the Radius parameter until you've sharpened an acceptable degree of image detail with the default the Scaling parameter of 25 often works just fine.

You can also turn off channel ganging for each parameter to individually vary the amount of sharpening that's applied to each color channel. For example, you may want to apply less sharpening to the blue channel of certain digital cameras because that channel is often noisier than the red and green channels.

Finally, there's a Horizontal/Vertical Ratio control that lets you selectively apply sharpening in one or the other dimensions, although that typically results in more of a special effect.

CORING FEATURES IN SHARPEN MODE

In Resolve, you can access additional sharpening features by explicitly choosing the Sharpen mode of the Blur palette. This makes the Coring Softness and Level parameters available to you (**Figure 19.6**).

Figure 19.6 The controls in the Sharpen mode of DaVinci Resolve

The Level parameter lets you raise the threshold of how much edge detail will be sharpened (**Figure 19.7**). Lower values sharpen all edges, while higher values omit more subtle, lower-contrast edges from the operation. Coring Softness lets you feather the transition between sharpened and unsharpened regions of the image.

Figure 19.7 Reducing the level control allows more of the image to be affected by sharpening, as shown on the top. On the bottom, raising the level control omits all but the most well-defined edges from the sharpen operation.

SHARPENING THE LUMA CHANNEL ONLY

If your application has a mechanism for it, another strategy for subtly sharpening an image can be to selectively sharpen just the luma channel. Since our eyes are more sensitive to luminance than to color, you can sharpen the luma in order to improve the image, but leaving the chroma alone will spare you potentially unpleasant artifacts in certain situations.

To do this in Resolve, simply right-click the node you want to use to apply sharpening and choose Colorspace > YUV. Then, open the Blur palette, and turn off the link control above the Radius sliders so you can adjust them independently. When you do this, the Red slider corresponds to the Y (luma) channel, while the green and blue sliders correspond to the U (C_B) and V (C_R) channels.

SHARPENING IN ASSIMILATE SCRATCH

In Assimilate Scratch, a single parameter in the Numeric tab of the Matrix, DeFocus, lets you progressively apply more and more sharpening when you lower it into the negative value range. At positive values, this is a blur operation.

SHARPENING IN FILMLIGHT BASELIGHT

In Baselight, the Sharpen operator (which you add as a "strip" to the shot you want to adjust) has four sets of controls (**Figure 19.8**).

- **Sharpening Controls** have Gain (how much sharpening to apply), Radius (how wide an area around each threshold-selected area of the image to sharpen), and Threshold (which areas of edge detail to sharpen) controls that let you set how much of the image to sharpen, and by which amount. Fringe Removal applies a subtle blur in order to address aliasing that might result.
- **Shadow Controls** lets you reduce how much sharpening is done in the shadows of the image.
- **Noise Filter** is a postsharpen operation that lets you remove exaggerated noise that can result within affected regions of the sharpen operation.
- **Channel Weights** lets you adjust how much of the current sharpening operation is applied to each color channels of the image.

Figure 19.8 Sharpen controls in FilmLight Baselight

The sharpening operation can also be limited with a shape or qualifier just like any other strip.

SHARPENING IN ADOBE SPEEDGRADE

Adobe SpeedGrade has a Sharpen operation that can be accessed via the Look Layer pop-up menu. Once added, it presents individual sliders for sharpening the red, green, blue, and alpha channels of an image that are ganged together by default (**Figure 19.9**).

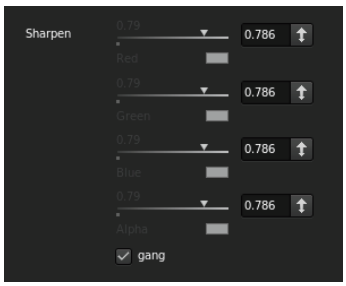


Figure 19.9 The Sharpen controls in Adobe SpeedGrade

The Sharpen layer can be limited by creating a mask and applying the inside or outside of the mask to that layer.

CHAPTER 20

TINTS AND COLOR WASHES

Colours are light's suffering and joy.
—Johann Wolfgang von Goethe (1749–1832)

One of the most basic stylizations in the colorist's repertoire is the tint, or color wash, when you just need to add *more*. The distinction between a tint or color wash and a color cast is a fine one, because both are caused by the same thing: the asymmetrical strengthening and weakening of an image's color channels above or below their original levels. Where digital grading is concerned, a tint is simply a deliberately severe color cast.

HOW DO CHROMATIC LENS FILTERS WORK?

Before we start looking at creating artificial tints, let's consider the original optical phenomena we're emulating. For years, cinematographers (and to a lesser extent, videographers) have been using optical filters to add a bit of color to images as they're recorded. To successfully re-create the effect of photographic filters in your grading application, it's helpful to understand how these filters—either chromatic or absorptive—affect the image.

- *Chromatic* filters warm or cool the color temperature of the image. With these filters, you can either correct for or create the quality of light as it appears at different times of the day.
- *Absorptive* filters increase the saturation of specific colors in the image; use them to emphasize a tone, such as the greens of foliage or the blues in the sky. When placed in front of the lens, absorptive filters block selected wavelengths of light while allowing others to pass. The result is a weakening of the color channels corresponding to the wavelengths being blocked, which introduces a deliberate color cast that affects the overall image as it's being recorded.

Seeing the effect is easier than describing it. **Figure 20.1** shows three versions of the same image. The top image was shot in afternoon daylight. Although the white balance of the video camera was manually set for daylight, the overall image is still warm given the quality of light.

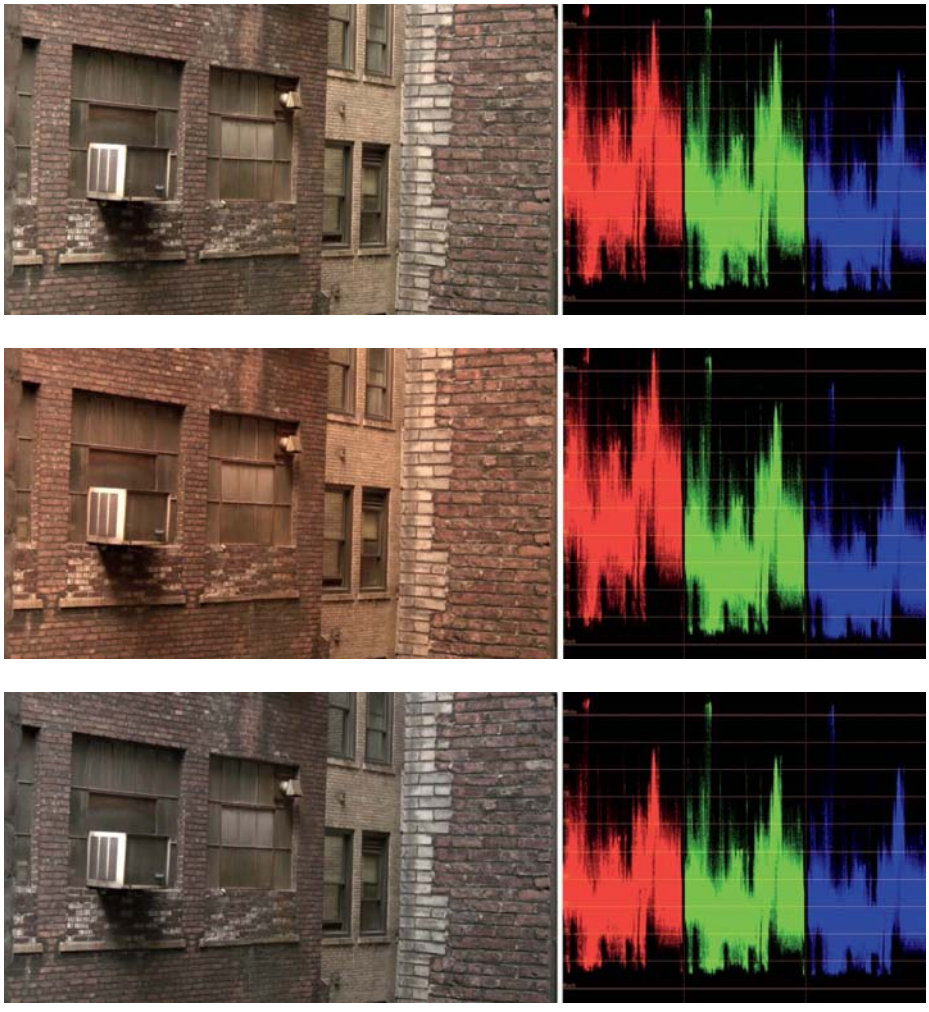


Figure 20.1 At top, the unfiltered shot balanced for daylight. In the middle, the scene tinted with a Kodak Wratten 85C optical filter placed in front of the lens. At the bottom, the scene is shown using a Wratten 80D filter.

The middle image was shot using the same white balance setting but with a Wratten 85C filter placed over the lens. The Wratten 85C is a "warming" filter, because it blocks blues to emphasize a combination of reds and greens that provide an orange cast, similar to the light produced by lower tungsten color temperatures.

The lower image was shot with the same white balance and a cooling Wratten 80D filter, which emphasizes blues, similar to higher daylight color temperatures. The light blue cast neutralizes the warm tones in the image and renders "whiter" whites.

NOTE

Wratten filters are named for Frederick Wratten, the English inventor who developed this system for optical filtration and sold his company to Eastman Kodak in 1912.

HOW OPTICAL FILTERS AFFECT COLOR

There's more to optical filtration than color temperature. For example, the strength of an optical tint is nonlinearly applied across the tonal range of the image. This means that lighter portions of the image are more affected by the filter, while darker portions of the image are less affected. Regions of pure black are affected least of all.

To see this, compare an unfiltered and filtered chip chart side by side in the Parade Scope. In **Figure 20.2**, a standard broadcast chip chart was shot twice, once with a neutral white balance (left) and once with a Wratten 85 lens filter over the lens (right). Each chart was then positioned side by side for simultaneous analysis by an RGB Parade Scope.

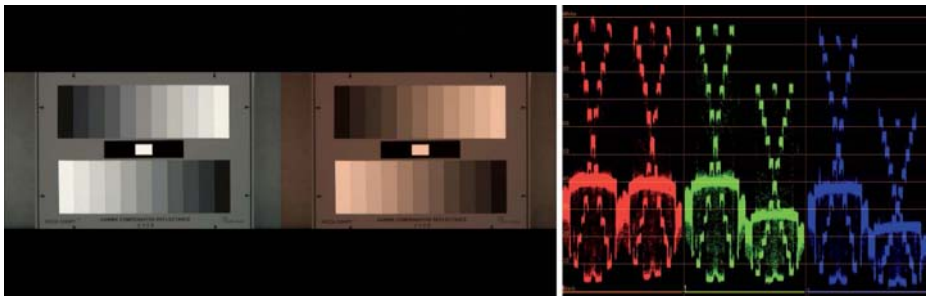


Figure 20.2 A standard white balance chart shot with a neutral white balance (left) and a Wratten 85 lens filter (right)

Looking closely at the pairs of bars at the top of the graph (which represent the brightest parts of the chip chart), you'll note several things.

- The left (unfiltered) and right (filtered) bars in the blue channel (the channel that is filtered the most) diverge quite widely, by approximately 29 percent.
- The bottom pairs of bars don't diverge nearly as much, with a maximum difference of about 4 percent in the blacks of the blue channel.
- You also can see that although the green channel is also filtered substantially, the red channel is virtually untouched.

Clearly, the filter is causing a strong color-channel imbalance in the highlights of the image that diminishes through the midtones, with almost no effect in the darkest shadows of the image.

HOW OPTICAL FILTERS AFFECT CONTRAST

Since optical filters block light, they affect an image's contrast as well; how much depends on the severity of the tint and the quality of the optics involved. As with color, this darkening is nonlinear, affecting the whites differently than the blacks.

Examine the resulting graph in the Waveform Monitor (**Figure 20.3**, right), and you'll see that the white points of each image differ by approximately 18 percent. The midpoint (represented by the gray bar appearing all the way to the right of each series) differs by approximately 13 percent, and the black points differ by only 3 to 4 percent. Typically, however, exposure is increased to compensate for this effect.

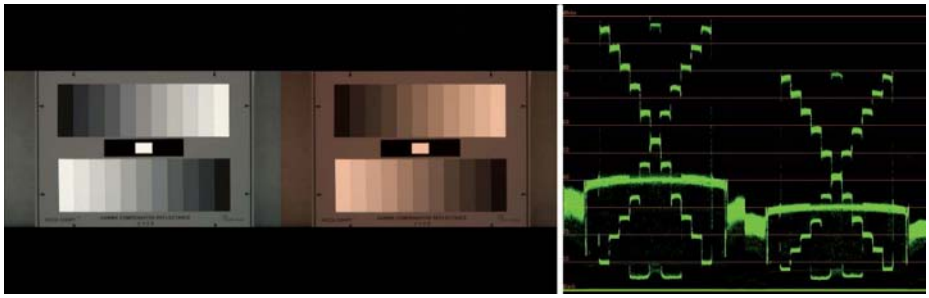


Figure 20.3 Unfiltered and filtered chip charts compared in the Waveform Monitor; notice how filtration reduces the overall amount of exposed light.

COLORED LIGHTING USING GELS

Instead of applying a filter to the camera lens, you can tint subjects indirectly by placing colored gelatin filters (called *gels*) directly in front of the scene's lighting instruments. The result is a more limited color cast that affects only the portions of the image being lit by the filtered instrument. As with lens filters, filtration done with gels is a subtractive process. In simple lighting situations—all lights are filtered with the same color of gel to create a uniform color temperature—the effect on the scene is similar to that of lens filtration.

You can simulate mixed lighting, with different color casts in various parts of an image resulting from different lighting fixtures, using HSL Qualification to isolate various regions of image tonality for discrete adjustment.

TINTING AND TONING FOR FILM

To the film preservationist, tinting and toning mean something quite different when applied to early methods for adding color to black and white motion picture photography. This will be covered later on, Chapter 23, "Vintage Film Looks," but for now know that these terms stem from specific film colorization techniques. *Tinting and Toning of Eastman Positive Motion Picture Film* (Eastman Kodak, 1922) defines these terms very specifically:

- *Toning* is defined as "wholly or partially replacing the silver image of the positive film by some colored compound, so that the clear portions or highlights of the image, which consist of plain gelatine remains unaffected and colorless."
- *Tinting* is defined as "immersing the film in a solution of dye which colors the gelatine, causing the whole picture to have a uniform veil of color on the screen."

The digital colorist no longer needs to tone the blacks of an image using silver sulphide (for a sepia tone), or uranium ferrocyanide (for a red-orange tone), nor tint film highlights via immersion in an aniline dye solution. Today these processes can be achieved using image math and compositing modes.

ARTIFICIAL TINTS AND COLOR WASHES

When you want to tint an image, ask yourself how much of the image you want to affect and how extreme a tint you need. There's no wrong answer, just what's appropriate to the scene and the client's expectations. However, these questions will help you sort out which tinting method is best for the scene at hand:

- **To quickly wash color through the overall tonal range of the image:** Push the Offset control toward the color you want to wash into the image. Note that this operation will contaminate the blacks and whites, but you will achieve a mix of the color you're introducing with the original colors of the scene.
- **To create an extreme tint that still retains some of the original color:** Use a combination of the Midtones and/or Highlights color balance controls; or, take a version of the shot that's been monochromatically tinted, or a color generator or matte consisting of the tint color, and mix it into your shot using Hard Light or Add composite modes.
- **To replace all of the original color in the image with a monochromatic tint:** Desaturate the image with an initial correction, and then add color back in using the color balance controls, similar to the Duotone technique shown in Chapter 7. Using the Gain color balance control will tint the highlights, while using the Shadow color balance control will tone the shadows. Note that toning the shadows will invariably lighten them as the color mix will lift some of the color channels.
- **To tint a specific portion of the tonal range of the image:** Use the Luma control of an HSL Qualifier to isolate the tonal region of the image that you want to add the color cast to, and then use the appropriate color balance control to add as much or as little of the tint as you need. Or, use your application's Log controls (with customized control over the width of the shadow and highlight zones) or controls for customizing the tonal range of the Lift/Gamma/Gain controls.
- **To tint only the highlights and midtones:** If your application supports Multiply, Overlay, or Soft Light composite modes, you can mix a color matte with the original with varying degrees of severity.
- **To tone only the shadows and midtones:** Use the Screen or Lighten composite modes to mix a color matte with the original image.

NOTE

This chapter covers tints and color washes as they're used in more modern contexts. For an understanding of how tinting and toning has been used historically, see Chapter 23, "Vintage Film."

BEWARE OF ILLEGAL LEVELS

Many of the composite modes covered in the next section easily create illegal luma or chroma levels. If broadcast legality is a priority, keep an eye on your scopes. If you're deliberately trying to create a bold look, do what you need to do and then compress and/or desaturate the highlights in a subsequent correction to make sure the final signal doesn't burden you with QC violations after you've delivered the show.

TINTING WITH COMPOSITE MODES

If you're not getting the results you're after using your application's color balance controls, you can try adding a color tint to your image using *composite modes* (also called *blending* or *transfer* modes). Composite modes work best when you're mixing a pure color generator, color matte, or color layer with the original image. The tint created using a composite mode can be moderated by either lowering the saturation or raising the brightness of the color being used or by using an opacity setting to render the superimposed color matte more transparent so that it contributes less to the final effect.

NOTE

Bear in mind that some composite modes are processor-intensive operations, so you may take a performance hit in using them. However, you can achieve unique color blends with this method that would be difficult to attain using other techniques.

Some commonly used composite modes are shown in **Figure 20.4** affecting an image with an accompanying red color generator.

Your results will be vastly different depending on which composite mode you choose. The math each mode uses to combine the images determines how the tint applies and to which portions of your image it is limited. You don't need to understand this underlying math, but it's good to learn the effects some of the more common modes produce. Of the twelve commonly implemented composite modes, seven—Multiply, Screen, Overlay, Hard Light, Soft Light, Darken, and Lighten—are useful for tinting effects.

For more information about compositing or blending modes, including the mathematics behind their use, consult *The VES Handbook of Visual Effects* (Focal Press, 2010), which provides a list of "industry standard" formulas for each mode, referenced from the excellent www.dunnbypaul.net/blends.

Figure 20.4 At top, the original image and color generator are shown. With the color generator superimposed over the image (my dog, Penny), the Multiply, Screen, Overlay, Soft Light, Darken, and Lighten composite modes are shown.

MULTIPLY

The Multiply composite mode is useful when you want a superimposed color matte to have the greatest effect on the whites of the image, with a diminished effect on the darker parts of the image and no effect at all on the black point. The white point literally becomes the tint color, and the midtones all become mixes of the original colors and the tint color. Absolute black is unaffected.

The Multiply composite mode multiplies the pairs of pixels from each image together. Any overlapping black areas remain black, and progressively darker areas of the clips darken the image. Overlapping white areas expose 100 percent of the opposing image.

This has a significant effect on the contrast of the image, with a tendency to darken that varies with the saturation and brightness of the color being superimposed. Unless your intention is to darken the image, the Multiply composite mode produces less extreme results when the superimposed color's saturation is reduced, and its brightness is raised.

SCREEN

The Screen composite mode is nearly the opposite of Multiply; it's useful when you want a superimposed color matte to have the greatest effect on the blacks of the image, with a diminished effect on the lighter parts of the image. The black point becomes the tint color, and the midtones become mixes of the original colors and the tint colors. Absolute white is slightly affected.

Screen is essentially the opposite of Multiply. Overlapping white areas remain white, and progressively lighter areas lighten the image. Overlapping black areas expose 100 percent of the opposing image. Like Multiply, Screen also has a significant effect on the contrast of the image, with a tendency to lighten that varies with the saturation and brightness of the color being superimposed. Reducing the brightness of the superimposed color is the best way to minimize this effect.

OVERLAY

NOTE

Because of the way it works, using Overlay with a superimposed color generator with a neutral gray color (0 percent saturation, 50 percent brightness) results in a minimal change to the image.

The Overlay composite mode is one of the cleanest and most useful composite modes available for tinting an image. It combines the effects of the Multiply and Screen composite modes in an interesting way, screening portions of the image that are above 50 percent brightness and multiplying portions of the image that are below 50 percent brightness. The result is that the midtones of the image are affected the most, the white point is only slightly affected, and the black point remains unaffected.

An added benefit is that the Overlay composite mode's effect on the contrast of the underlying image is largely limited to the midtones and, to a lesser extent, the white point.

Lowering the saturation and/or raising the brightness of the superimposed color generator boosts the midtones and whites, and raising the saturation and/or lowering the brightness lowers the midtones and whites. Making these changes results in a nonlinear change to the distribution of the midtones.

HARD LIGHT

The Hard Light composite mode creates a more evenly distributed tint than the other composite modes, in that the tint has a significant effect on the whites, mids, and blacks of the image. It's most useful when you want to create an extreme tint. Unlike the Sepia or Tint filters, however, the tint color still interacts with the original colors from the underlying image.

The saturation and brightness of the superimposed color generator determine the degree to which different portions of the image are affected. Colors with higher saturation have a greater effect on the whites, and colors with higher brightness have a greater effect on the blacks.

The Hard Light composite mode also affects the contrast of the image, both lowering the white point and boosting the black point, as you can see in the Waveform Monitor. How the whites and blacks are affected by the superimposed color depends on the intensity of the color.

SOFT LIGHT

The Soft Light composite mode is a milder version of the Hard Light composite mode, with a significant difference—it has no effect on absolute black. It's useful when you want a more even wash of color over the whites and mids, and down into the blacks, but you want the absolute blacks of your image to remain unaffected.

The Soft Light composite mode's effect on the contrast of your image is similar to that of the Overlay composite mode.

DARKEN

Only the darkest of each overlapping pair of pixels contributes to the final image. The result is often more of a graphic effect than a tint, although the Darken composite mode can be used as a tool for creating other unusual looks, as seen in Chapter 11, "Flattened Cartoon Color."

LIGHTEN

The lightest of each overlapping pair of pixels contributes to the final image so that the brightest parts of each image are preserved. For tinting with a solid matte, this has the practical effect of flattening all of the shadow values darker than the superimposed matte to the overlapping color.

CREATING A COLOR MATTE FOR TINTING IF YOUR APPLICATION DOESN'T HAVE ONE

While tinting using a colored matte and composite modes is one of the oldest tricks in the book for NLEs and compositing applications, some grading applications lack the ability to create a colored matte, or at least to create a colored matte where you want one. If this is the case, don't fret; there's an easy bit of grading trickery you can pull to create one, without needing to import a colored still to use as a matte.

In the following example, you'll create a colored matte in DaVinci Resolve's node tree, for use in tinting. However, you can use this technique in any application.

1. As always, grade the application as needed prior to applying the tint.
2. To create the setup for this tint, you need to "superimpose" another correction in such a way as to use a composite mode to combine it with the previous corrections. In DaVinci Resolve, this is done using a Layer Mixer to combine two input nodes.
3. With the nodes (adjustments) set up, select the bottommost node (node 3 in **Figure 20.5**) and use any of the contrast controls to crush the entire video signal to clip at black.
4. Next—and this is important—use whatever controls are available to keep that data clipped.

   Most modern grading applications have a 32-bit floating-point image processing pipeline, which means data that gets clipped is preserved from operation to operation. You actually don't want this, since it will potentially ruin your nice flat matte, so in Resolve you can make a small adjustment to the Soft Clip curves, any adjustment really, to keep the crushed data clipped.
5. Add another adjustment after the one in which you clip the image (node 4 in Figure 20.5). This is where you'll turn the flat black field created in step 3 into a colored matte. Within this correction, use the Offset Master and Color Balance controls to turn the black image into any color you like.

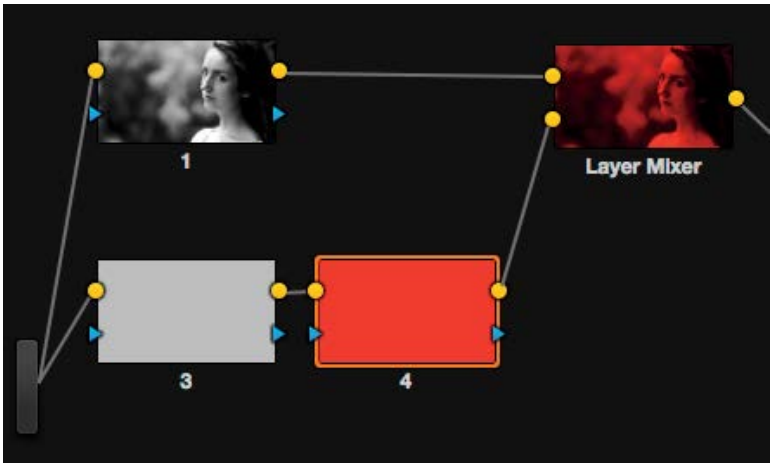


Figure 20.5 The node setup for creating a flat field of color and then combining it with the original image

6 Finally, right-click the Layer Mixer node and choose a composite mode you want to use to apply the tint (Figure 20.5). In this example, the Multiply mode coupled with a deep red matte creates a vivid, graphic effect.

TINTING IN ADOBE SPEEDGRADE

Adobe SpeedGrade has a variety of look layers that employ these techniques without the need for a dedicated color matte. fxSepiaTone, fxTinting, and fxNight all provide different methods of tinting.

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CHAPTER 21

UNDERTONES

In visual perception a color is almost never seen as it really is—as it physically is. This fact makes color the most relative medium in art.
—Joseph Albers (1888–1976)

Undertones is the name I use for a particular commercial look that's especially popular with promos and that has, by its use in features, become associated with big-budget filmmaking.

A *tint* or *color wash* is a color cast that you apply to the overall image, even though it may deliberately not affect the highlights or shadows of an image. An undertone differs in that it's a color cast that you apply *very specifically* to a wedge of image tonality, often somewhere within the upper shadows of an image.

There are several different approaches you can take to creating undertones, each with different advantages.

UNDERTONES THROUGH CAREFUL GRADING

The easiest way to insert a limited zone of tinting into an image is to start by adding color throughout, using an indiscriminate tool such as the Offset color-balance control. Then you use neighboring color balance controls to eliminate unwanted color contamination from the shadows and highlights. The following example shows this in action within FilmLight Baselight (**Figure 21.1**).

Figure 21.1 Broad undertones achieved by adding color with the Offset color balance control and then neutralizing the shadows and highlights

Using the Film Grade's Offset control, a warm cast is added to the overall image, which adds color to the shadows and highlights as well. Switching to the ShadsMidsHighs tab, the Shadows and Highlights controls are then used to rebalance the tonal extremes of the image, limiting the tint to the middle.

This isn't perhaps the most specific way to make this adjustment, but it's fast and easy to do with most applications and is useful when you want to add a broader undertone to the midtones of the image.

SPECIFIC UNDERTONES USING CURVES

The trick to creating undertones is to use a group of control points to add a tightly controlled boost or drop in a particular color channel of the image. For a more sophisticated look, try keeping the darker shadows in the image untinted so that there's some contrast between the tinted and untinted regions of shadow.

In **Figure 21.2**, you can see a fairly narrow boost to the green and blue channels created with three control points.

Figure 21.2 Using curves to create colored undertones in the upper shadows of the image, providing an extra splash of color

The result of this selective boost is a blue-green undertone throughout the image that contrasts well with the natural color and lighting from the original scene. Also, by leaving the bottom blacks and upper midtones and highlights untouched, we give the image a clean vibrancy that it wouldn't otherwise have if we'd gone with a more aggressive tint.

This technique is useful for creating a bit of color contrast to spice up an otherwise chromatically uninteresting scene, assuming the situation and the client's tastes merit it.

This is a good way of creating undertones because of the smooth mathematical roll-off that the curves provide; you're unlikely to easily spot crunchy or chattering edges where your color undertones meet the untouched neutrality of the rest of the image.

TIP

Keep in mind that a curve is at its neutral position when it crosses the middle intersecting gridlines. When creating undertones, you want the majority of the curves to be at this neutral détente position.

SPECIFIC UNDERTONES USING LOG CONTROLS OR FIVE- AND NINE-WAY COLOR CONTROLS

Log-style controls, described in Chapter 4 of *Color Correction Handbook*, can be used with normalized image data to insert color into very specific tonal zones. They're useful for this technique as well, should your grading application have them. For example, **Figure 21.3** has a dark, high-contrast grade that the client would like to give a greenish-blue tinge to, in the shadows.

Figure 21.3 The original grade, before adding undertones

Adding a layer after these initial grades and using the Film Grade operator lets you use the Shadows, Contrast, and Highlights pivot controls to limit the tonal zone that will be affected by the Midtones control-balance control so you can add a bit of color to tint just the light shadows of the image (**Figure 21.4**).

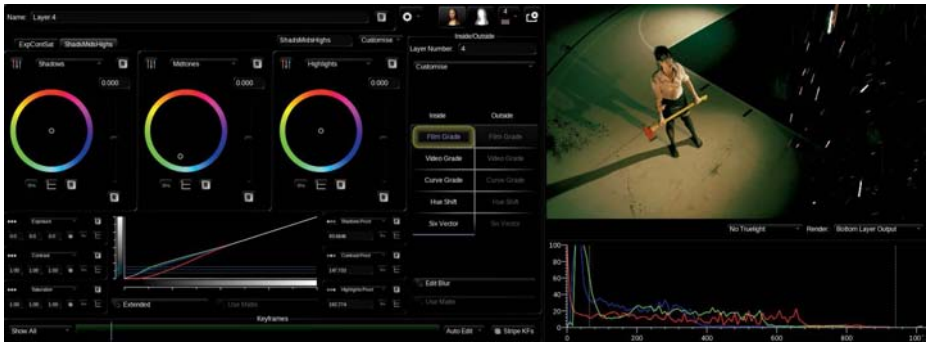

Figure 21.4 Using the Film Grade in Baselight to add undertones to the light shadows of the image. Notice how the LUT graph shows you what zone of image tonality you're affecting based on the settings of the pivot controls.

Similarly, if your application has five-way grading such as the "Bands" in SGO Mistika (**Figure 21.5**, right), or selectable nine-way controls as used in Autodesk Lustre and Adobe SpeedGrade (**Figure 21.5**, left), you can use their customizability to accomplish the same thing. For example, when you switch to the Shadows, Midtones, or Highlights tonal ranges in the Look tab of SpeedGrade, M/H (Midtones/Highlights) and S/M (Shadows/Midtones) sliders let you redefine the border of overlap between each of the three tonal regions of the image.

Figure 21.5 Shadows, Midtones, and Highlights controls used in Adobe SpeedGrade (left), and Bands controls used in SGO Mistika (right), for making color adjustments in limited regions of image tonality

Using these sliders, you can limit all of the primary controls of the Look tab to a narrow zone of image tonality.

EXCLUDING SKIN TONE FROM SINGLE-OPERATION UNDERTONES GRADES

A common technique—especially when you're using an aggressive color for your undertones that might not necessarily be flattering when overlaid onto the people within the frame—is to deliberately exclude all skin tones from the affected area where you're applying undertones.

How you accomplish this depends on the functionality of your grading application, but if you're creating undertones within a single-operation adjustment, an extremely simple way of fixing this is to use your HSL qualifier to isolate the skin tones of the image as best you can and then invert the resulting key (**Figure 21.6**). This assumes that your grading application is capable of limiting whichever controls you used to create the undertones. However, using your qualifier to omit part of the picture from being affected by the undertone operation is a quick way of dealing with this issue.

Figure 21.6 Using the HSL qualifier within the same operation used to created colored undertones to omit skin tone from the adjustment

As has been said many times before, you do not need a perfect key when isolating skin tone for this type of adjustment. What you care most about are the visible midtones and highlights of skin, so those parts of your key should be solid.

However, shadows would be plausibly affected by the undertone, so omitting them isn't the worst thing in the world. Furthermore, feathering the skin isolation using your HSL qualifier's soft and/or blur controls helps keep colored contouring and jagged edge artifacts from creeping into the image.

THE HAZARDS OF SKIN TONE OMISSION

Keep in mind that when you indulge in this type of skin tone holdout, you're increasing the visibility of your image segmentation. Overdoing the difference between the undertone and the untouched skin tone of the image will look increasingly artificial, so you might consider adding a little bit of the undertone to the actors in frame just to keep them "in the scene."

SPECIFIC UNDERTONES USING HSL QUALIFICATION

A different strategy is to use a Luma qualifier to isolate a range of darker midtones or lighter shadows to which to add your colored undertone (**Figure 21.7**).

Figure 21.7 Isolating a thin wedge of image tonality using HSL Qualification in order to create a color undertone

When using HSL Qualification to create undertones, it's a good idea to feather the matte well using the tolerance or softening handles of the Luma qualifier. This gives a nice smooth transition from the tinted to the untinted portion of the image, without the haloing that excessive blurring of the matte might cause. Even so, adding a bit of blur afterward to smooth out the remaining rough patches of your key is usually a good idea.

This method allows you to use the three-way color balance controls, which make it easier to get the range of color you want. However, these controls work best when you're able to pull a clean key.

EXCLUDING SKIN TONE FROM MULTI-OPERATION UNDERTONES

If you're creating undertones using HSL Qualification, then you'll need to combine a second HSL Qualification operation with a Boolean operation to subtract the skin tone key from the undertone key. Different applications handle this in different ways, but here's a look at how to accomplish this using the Key Mixer in DaVinci Resolve.

First, you need to set up a node tree that will allow you to pull two keys off of your initial correction, combine them using a Key Mixer node, and then feed the resulting mask into the Key input of the final node you'll be using to actually perform the undertone adjustment. (Note that the Key input is the small triangular input at the bottom-left of each node.) **Figure 21.8** shows this setup.

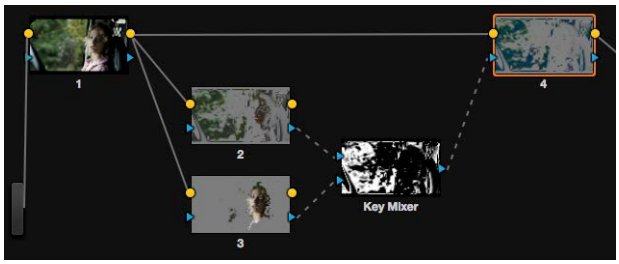

Figure 21.8 One possible node setup for subtracting a key of the woman's face from the undertones key we'd created earlier, using the Key Mixer

Figure 21.9 provides a closer look at this process. The top-left key is the original undertone mask. The bottom-left key is a key pulled off of the woman's face.

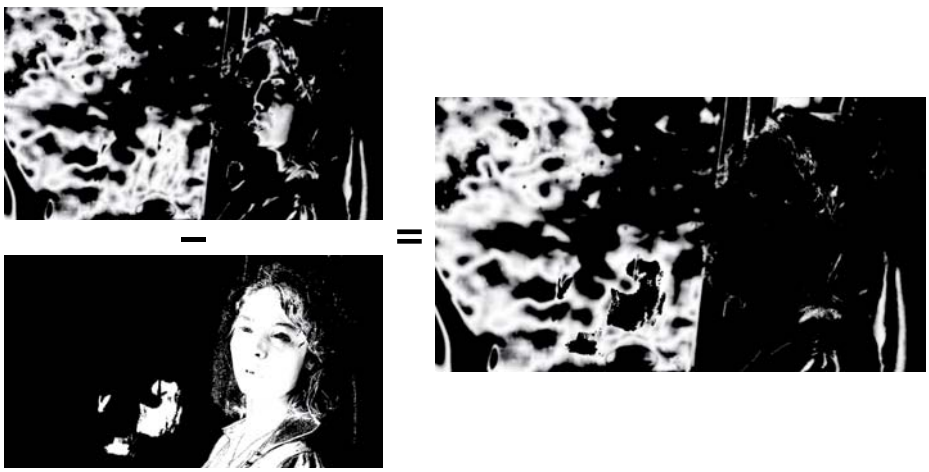

Figure 21.9 Subtracting the face matte from the undertone matte

To actually perform the subtraction, you need to select the connection line running from node 3 to the Key Mixer node (highlighted yellow in Figure 21.8) and then open the Key tab (found within the Color page) so the controls are labeled "Input Link 2." Click the Invert checkbox, and then click the Mask radio button (**Figure 21.10**); the second mask will be subtracted from the first, as shown in the right image of Figure 21.9.

Figure 21.10 Inverting and setting the second key to Mask in Resolve's Key tab to subtract the second key from the first using the Key Mixer node

This results in clean, untouched skin tones, even as the background of the van and the image outside the window are still affected by the bluish undertones (**Figure 21.11**).

Figure 21.11 The final effect: undertones throughout the background, excluding the foreground actor from the effect

UNDERTONES NEED NOT ONLY BE GREEN

While the "promo" look very often involves throwing an olive green undertone into an image, this technique is more versatile than that. For example, if you're trying to do a blue-tinged day-for-night look, this is a good way to introduce a bit of blue to the image without tinting it massively.

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CHAPTER 22

VIBRANCE AND TARGETED SATURATION

Full, saturated colours have an emotional significance I want to avoid.
—Lucian Freud (1922–2011)

A simple linear increase in saturation throughout the entire image doesn't always produce the most attractive result. However, an increase in saturation in a specific region of saturation intensity can create much more interesting and lively effects, so long as you target the right parts of the image.

VIBRANCE

Photographic applications such as Lightroom have a saturation control that's targeted at low-saturation color in an image. This control is referred to as *vibrance*, which typically excludes highly saturated areas of the image, as well as skin tones, letting you subtly enrich an image without oversaturating it.

If your application doesn't have a vibrance control, there are other ways of achieving the same result. For example, SGO Mistika has a Saturation vs. Saturation curve that lets you make targeted saturation adjustments based on the saturation within the image (**Figure 22.1**). This is an extremely flexible control that lets you make many other kinds of adjustments.

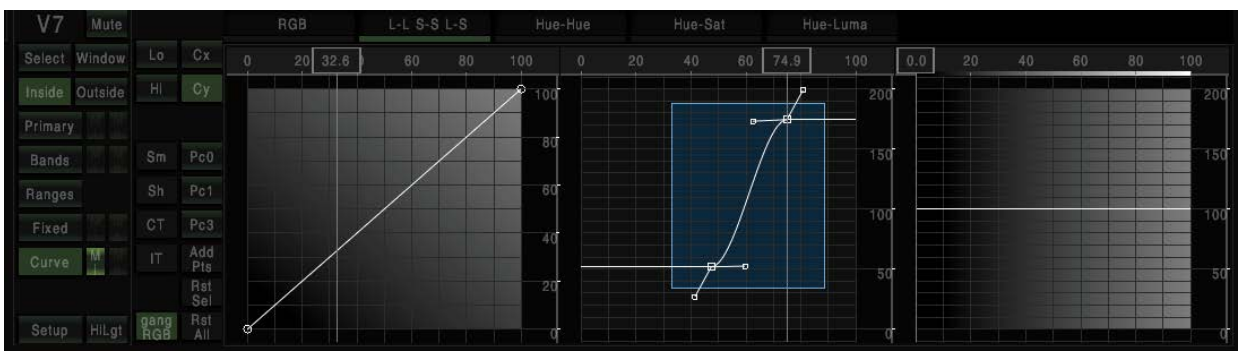

Figure 22.1 The Sat vs. Sat curve in SGO Mistika

Lacking that, the HSL qualifier of your application can be used to create a custom vibrance effect. Simply turning off the Hue and Luma controls leaves you with a Saturation qualifier that you can use to target areas of middle-to-low saturation in your image.

When you do this operation, the actual range of saturation in your image may seem quite narrow, depending on how saturation is mapped onto the qualifier controls. In **Figure 22.2**, the middling saturation is isolated, with the band of saturation appearing far to the left of the qualifier.

Figure 22.2 Isolated saturation, far to the left of the HSL qualifier

It's important, in order to avoid introducing contouring artifacts, to keep the edges of the qualified range of saturation feathered using the qualifier softness controls and possibly with a bit of blur applied to the key as well. Also, be careful not to contaminate the shadows of the image with an undue amount of saturation; the idea is to saturate only the lower and middle regions of saturation in order to give a colorful boost without overdoing areas of the image that shouldn't be more saturated than they already are (**Figure 22.3**).

Figure 22.3 Top to bottom: the original image, the image with a "vibrance" operation applied to increase the saturation of only a narrow range of low-saturation values, and the same saturation increase applied to the entire image

Another caveat is that this operation can sometimes have an overbearing effect on skin tones. This can be remedied, but omitting skin tone from this operation depends on your grading application's ability to subtract one key from another. For example, you can subtract one key from another in DaVinci Resolve via the Key Mixer (**Figure 22.4**). When you do this, be sure that you've omitted skin tone shadows from the operation, since any fringing could end up oversaturated, looking problematic.

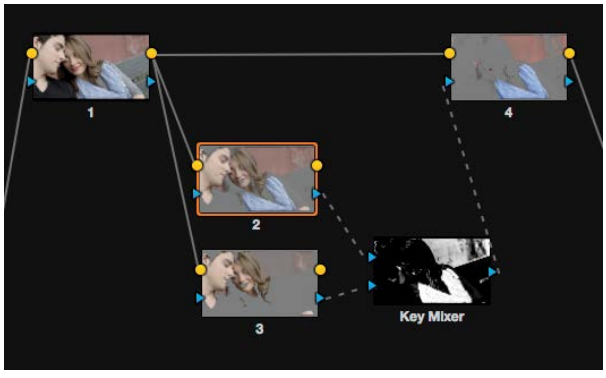

Figure 22.4 Omitting skin tone using the Key Mixer in DaVinci Resolve

A vibrance operation, especially when used in conjunction with images that have darker colors, can be a great way to get beautiful deep colors that don't feel exaggerated.

TARGETING HIGH SATURATION

On the other hand, Giles Livesey, colorist of *Lara Croft: Tomb Raider*, *Shaun of the Dead*, and commercial spots too numerous to count, shared another technique for specific saturation adjustment: targeting regions of high saturation and intensifying the saturation of these areas even more to achieve a commercial look.

This is done in the same way as creating your own vibrance effect, by doing a Saturation-only qualification and isolating only the highest-saturated regions of the image, being sure to use the softening of the qualifier to keep the edges nicely feathered. With this done, you can now pump up the saturation, as shown in **Figure 22.5**.

Figure 22.5 Before and after a saturation boost to only the high-saturation parts of the image

This seems to be particularly effective with glossy product shots, giving the images an almost "lickable" quality, if I can draw upon some old Apple marketing for adjectives. However, it can also be a good way to add a sheen of saturation to other types of shots when you're looking for a little something extra but you don't want to make the image look plastic all over (Figure 22.5).

Keep in mind when you use this technique that you can easily exceed the boundaries of broadcast safe, so be sure to keep your hand on the clipper if this is important.

CHAPTER 23

VINTAGE FILM

Let's take a look at a few methods for creating a grading staple: the vintage film look. There are a variety of flaws you can use to simulate the look of older film.

- Film printed over many generations of internegatives loses the dense blacks and highlight detail of first-generation prints, and it suffers from the introduction of even more grain. Repeated printing also introduces increased potential for white dust spots (dust on the negative blocking light during printing).
- Some photochemically developed print stocks that have remained in storage for a long time suffer from faded color. Some dyes fade faster than others, depending on the stock, resulting in yellowish or magenta casts in old color film prints.
- It's useful to keep in mind that color timers were restricted to the equivalent of "lift" control over exposure; there were no curves or Lift/Gamma/Gain controls available among the Master/RGB controls of a color analyzer. If you wanted to lighten the image, you had to lift the blacks.
- Films shot on older (and cheaper) cameras may exhibit irregular focus because of lower-quality lenses. Even older lenses of quality were a bit softer, as well, though in some instances this is a sought-after feature.
- In very old films, exposure variations were introduced as a result of hand cranking.
- Older color stocks exhibited stronger grain patterns than the modern set of fine-grained stocks. Slower stocks also meant there was more necessity for chemically "pushing" film when greater exposure was needed, which exaggerates grain even more (though many filmmakers did this deliberately for effect).
- Finally, repeated projection introduces scratches and other damage.

Color, contrast, and focal flaws are easily created in most grading applications. Noise/grain introduction should also be fairly easy. However, dust and scratches are usually the domain of compositing applications or third-party filters. If your grading application supports dust/scratch/damage filters, then you're in a great position to go crazy.

Otherwise, you'll need to focus on the color/contrast/focus components of the film distressing in your grading application and add any simulated physical damage elsewhere.

For each of the examples in this section, we'll use the image in **Figure 23.1** by photographer Kaylynn Raschke, of "The Portals of the Past" in San Francisco's Golden Gate Park.

Figure 23.1 "The Portals of the Past," in San Francisco's Golden Gate Park, will be our test image for creating several vintage film looks.

It's a good image to experiment with as it combines clean whites, deep shadows, lots of color in the greenery, and blue sky showing through the trees and reflected in the water.

METHOD 1: FADED COLOR

This one's pretty simple to implement in nearly any grading application. The main point of variation is how much of the original color you want to preserve for your faded look.

One thing to pay attention to is the order of operations performed in separate corrections. The techniques employed by this look often involve building upon the state of the image as output by a previous operation.

1 In an initial correction, boost the contrast using a luma curve. In this same correction, also turn the saturation way down (by around half). You don't want to overdo it as you're going for faded, not desaturated, but it's all a matter of taste (**Figure 23.2**).

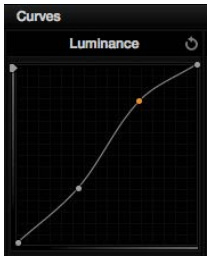

Figure 23.2 A luma curve used to boost the highlights

2 When adding a second correction, use an extremely soft oval shape/Power Window stretched over the entire frame to add a shadowy vignette to the image, lowering both the midtones and the highlights *outside* of the shape. This creates a starkly visible shadow around the perimeter of the image that extends well into the middle of the frame. For this look, now is not the time for subtlety.

3 When adding a third correction, use another shape/Power Window, this time one that's more circular and much softer. You'll use it to add some blur outside the shape to everything but the very center, emulating the sometimes quite spherical lenses of very old cameras (**Figure 23.3**).

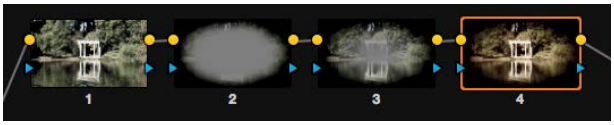

Figure 23.3 The node tree used to create this effect in DaVinci Resolve, although the same adjustments can be accomplished in any layer or filter-based interface

4 Add a fourth correction that you'll use to simultaneously adjust the look of the entire grade that you've created up until now. Within this correction, push the Gain color balance toward a subtly warm orange color cast and, for the coup-de-grâce, compress the contrast of the entire sandwich of corrections by lifting the shadows (giving you a more faded look) and dropping the highlights (giving you a slightly flatter look, as shown in **Figure 23.4**). Nothing says vintage postcard like compressed contrast.

Figure 23.4 A faded, heavily vignetted vintage film treatment

At this point, we have a really nice look going on, but there are still some options. If your grading application supports some type of grain/noise insertion, now is the time to add it if you want to get that "tenth-generation optical print" look.

Also, if you really want to seal the vintage look, keyframe some random highlight adjustments bouncing up and down to emulate the flickering of hand-cranked or irregularly exposed film. If you want to maintain visibility in the underlying image, you could also keyframe this flicker to apply to just the darkened vignette applied in step 2.

TIP

If your grading application has Y'-only contrast adjustment controls, you can use them to create vignetted shadows that are "blacker" and more shadowy than the darkening caused by more typical YRGB contrast adjustment controls, which manipulate saturation as well as image lightness.

VINTAGE FILM ASPECT RATIOS

Color isn't the only signifier of old film. Truly vintage film was originally shot using a 4:3 aspect ratio, dating from Thomas Edison's initial aspect ratio choice of 1.33:1. Widescreen didn't emerge as a filming standard until the unexpected popularity of Cinerama's ultra-widescreen answer to television in 1952 (with a screening aspect ratio of 2:65:1). Ultimately, Universal Studios introduced the now-standard film aspect ratio of 1.85:1 by cropping the top and bottom of the original squareish film frame, and many other widescreen formats followed.

METHOD 2: DISTRESSED DYES

With some old stocks, the cyan dyes fade faster than the yellow and magenta dyes, which is the reason for the yellow or magenta cast seen in many old color films. In this next example, we'll look at how to create this effect using R, G, and B curves, similarly to the cross-processing simulation technique covered earlier:

1 When adding your first correction, desaturate the image slightly, somewhere around 20–30 percent. Next, use the luma curve to boost the upper midtones and highlights, making the bright parts of the image that much brighter and more washed out, while leaving the shadows largely alone. You don't want to crush the shadows this time.

   However, you do want to crush the highlights; if you have a soft clip setting of any kind, use it to clip out the highlight detail you've pushed beyond 100 percent to keep it from coming back in subsequent operations.

2 When adding a second correction, create the RGB curve adjustment that will emulate the fading of the cyan dye layer. Boost the midtones and highlights of the red curve (while pinning the shadows at neutral), drop the top control point of the green curve down to clip off the highlights, and then similarly boost the top of the blue curve (while pinning the shadows at neutral) in order to provide the magenta/yellow color interactions you want (**Figure 23.5**).

Figure 23.5 The RGB curves used to create our vintage magenta look

These color curve adjustments aren't scientific in the least; they're entirely a matter of taste. Furthermore, this effect will vary depending on the source image, so applying this adjustment to another clip entirely won't necessarily create the same results.

3 Finally, add a third correction, in which you lift the shadows and lower the highlights, compressing contrast and adding to the faded appearance of the image. At this point, you may also want to lower the saturation just a bit, to knock off the edge and keep the correction looking truly faded (**Figure 23.6**).

Figure 23.6 A treatment emulating the fading of the cyan layer of film emulsion, which lends some old prints a magenta cast

Again, if you want to go the extra mile, now is the time to add some film grain/noise and, if appropriate, a bit of exposure flicker.

METHOD 3: DRAMATIC BLACK AND WHITE

Now let's examine what I'll refer to as a "dramatic" black-and-white look. My interest here is in creating a solid, silvery, '50s/'60s style of black and white. Think crime dramas and war stories.

Before you do anything else, check out the section in Chapter 18, "Monochrome Looks," on creating custom channel mixes for desaturating images. If you have time, that technique is a good foundation for this type of treatment. Otherwise, if you're in a hurry, dropping saturation to 0 percent will work just fine in conjunction with a contrast adjustment.

1 When adding a first correction, desaturate the image. Then, use the luma curve to stretch midtone contrast and gently add shadow density using a bottom-heavy S curve. Black-and-white film stocks could be very fine grained, however, so avoid crushing the blacks (**Figure 23.7**).

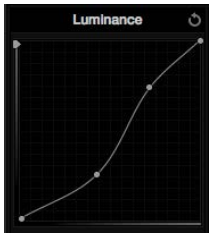

Figure 23.7 The luma curve used to add "density" to the shadows by stretching the midtones without crushing the detail out of the blacks

2 When adding a second correction, take the optional step of adding a subtle vignette around the edge of the picture using a shape/Power Window, slightly darkening the midtones and highlights outside of the shape in order to give some variation to the exposure of the picture. You could also elect to leave this off if you want to keep the image a bit less "old-timey."

3 When adding a third correction, lift the Gain contrast control around 5–10 percent to slightly wash out the blacks in order to account for the lack of nonlinear contrast control in traditional film timing. This is optional, and there's also a case to be made for dropping the blacks of overly exposed material, but I find that a bit of black lift really helps to sell a vintage shot (**Figure 23.8**).

Figure 23.8 The three nodes used to create this effect in DaVinci Resolve. Again, these three corrections are simple and can be performed in any color correction application.

4 Here's one more optional step, and it's something I like to do based not necessarily on film-print aging but on photographic-print aging: It's to add a *very slight* color cast to the highlights, usually a coolness or a warmth (if you can describe your adjustment as blue or orange, then you've gone too far). It's a good way to give your grade a unique quality that the average "make it black and white by dropping the saturation" crowd wouldn't think of (**Figure 23.9**).

Figure 23.9 A black-and-white vintage look designed not so much for looking distressed, as for looking dramatic. A slight silvery cool cast is added for effect.

For this look, it's really optional whether you add simulated film grain/noise to the image, although if the image has an eerie digital cleanliness, a bit of grain can really knock the digital edge off. However, fine-grained black-and-white film stocks have long been available that have a very smooth look, and it's entirely likely that whatever noise is already in your digital media is enough.

On the other hand, one other adjustment you could add to this look, if there are really bright highlights, is to simulate film blooming by adding a bit of glow using HSL Qualification, as shown in Chapter 12.

UNIFORM TREATMENT OF BLACK AND WHITE SOURCE MATERIAL

This last technique also highlights a strategy I use whenever I'm confronted with a wide variety of black-and-white photographs, film, or video from different sources that I need to integrate into a single program, usually a documentary. Often, archival materials from different sources have many different color casts. Sometimes the variety is nice, but sometimes the client wants a bit of uniformity.

I like the slight tint that faded color or black and white photos often have, so while I generally try to minimize color casts that are objectionable, I do like to leave a bit of the original "vintage" flavor in, if possible. However, in cases where I have a collection of different black-and-white media that all need a uniform look, I'll use the technique just described to desaturate the photos first, before I adjust contrast and then add a hint of color. Saving the grade, I now have an easy way to give every black-and-white image within that program a matching look.

METHOD 4: TINTED BLACK-AND-WHITE FILM TREATMENTS

For this last example in the book, I thought it would be fun to go back to the origins of color in the film industry. Funnily enough, early black-and-white films were not always black and white. Films stocks were tinted different colors, so the projected image was actually a black base image against whatever color of tint was used (**Figure 23.10**, on the next page). Different scenes, in fact, would be tinted differently, such that within a single film different tints would indicate whether a scene was day (Sunshine, a brilliant yellow) or night (Turquoise, a clear blue), and whether characters were happy (Rose Dorée), angry (Inferno, a bright red), or sad (Nocturne, a deep violet-blue).

Figure 23.10 Scans of early tinted film, courtesy Brian Pritchard (www.brianpritchard.com)

Tinting and toning went in and out of vogue over the years, but color via tints, duotones, and other more labor-intensive processes were not unknown in the early days of cinema. We can't always appreciate this color today because many of the dyes that were used in these processes have faded, or telecine transfers have discarded the color altogether when transferring to monochrome video. However, "back in the day" color was used enough to be the subject of much research by Kodak. As described in an article by Loyd A. Jones (Kodak Research Laboratories, 1929) entitled "Tinted Films for Sound Positives":

> *Subjective associational relationships [between color and audience reaction] are somewhat more tenuous and difficult to establish with certainty. Some of these undoubtedly have been built up in consciousness by somewhat artificial associations*

of certain colors with definite emotional states. Others of these correlations may probably be traced to extensions of more direct associational factors. For instance, there seems to be a character of warmth associated with all of the colors in the yellow, orange, red, magenta category, while the remainder give a definite impression of cold or coolness. This is very probably an extension of the more direct associational value arising from the color of sunlight and fire and the atmospheric conditions normally associated with coldness. The association of color with certain temperamental phases of life, such as youth, maturity, old age, etc., can probably be traced to an extension of a more direct association with the seasons of the year. Space does not permit us to carry this analysis into greater detail, but a serious study of this subject can hardly fail to convince the fair-minded student that there is really some definite and psychologically sound relationships between colors and emotional states.

Jones then goes on to cite *The Language of Color* (Dodd, Mead, and Company, 1920,) in which Matthew Luckiesh describes a study of 63 college-aged students (scattered among engineering, science, literature, arts, and agriculture), half male, half female, conducted by N.A. Wells in 1910. Twelve colors of full saturation were painted with aniline dyes on white watercolor paper. A chart of these colors was hung before each subject, each of whom was asked to arrange twelve adjectives to match each of the colors, such as quiet, sad, exciting, cheerful, depressing, gloomy, peaceful, and so on. Adjectives were chosen that would fall into three groups: energized, tranquilized, and subdued.

The resulting chart showed the kinds of color associations that went on to inform the production and use of tinted black-and-white film (**Figure 23.11**). Interestingly, this research mirrors the typical warm/cool emotional axis that's commonly used to more subtly adjust the color temperature of scenes in cinema to this very day. I also like this example of early color research because of the vocabulary employed to describe the use of color.

200 THE LANGUAGE OF COLOR

Total Number of Replies from 63 Subjects Indicating Three General Types of Mood-Reactions Due to the Twelve Different Colors

	Exciting influence	Tranquilizing influence	Subduing influence
Crimson	41	0	10
Scarlet	56	0	0
Deep Orange	59	0	0
Orange-yellow	55	6	0
Yellow	53	6	0
Yellow-green	14	39	5
Green	28	32	0
Blue-green	32	23	6
Blue	11	21	30
Violet-blue	0	17	45
Violet	0	6	54
Purple	3	1	48

Figure 23.11 Chart of observer responses to selected colors. Source: Matthew Luckiesh, (Dodd, Mead, and Company, 1920).

As described in Paul Read and Mark-Paul Meyer's *Restoration of Motion Picture Film* (Butterworth Heinemann, 2000), there were two general methods used for tinting film. Film could be tinted via a variety of chemical processes after exposure. Film was also sold pretinted so that exposing and developing the stock resulted in a black-on-color result. Furthermore, duo-toning could be achieved by shooting with a pretinted stock and then doing additional toning of the silver layer in the lab to achieve two-color looks (**Figure 23.12**).

The terminology we use in grading effects today stems from this early work in film. *Tinting and Toning of Eastman Positive Motion Picture Film* (Eastman Kodak, 1922) defines these terms very specifically:

- *Toning* is defined as "wholly or partially replacing the silver image of the positive film by some colored compound, so that the clear portions or highlights of the image, which consist of plain gelatine remains unaffected and colorless."
- *Tinting* is defined as "immersing the film in a solution of dye which colors the gelatine, causing the whole picture to have a uniform veil of color on the screen."

Figure 23.12 An example of a copper-toned film from 1916, courtesy Brian Pritchard (www.brianpritchard.com). Note that only the darkest parts of the image are colored; the highlights are left alone.

When considering historical colors to draw upon for a dated, tinted-stock look, these pretinted stocks can be a good source of inspiration. In 1921 Kodak released a line of Cine-Positive films, black-and-white reversal stocks sold with nine standardized tints including lavender, red, green, blue, pink, light amber, yellow, orange, and dark amber (**Figure 23.13**).

Figure 23.13 Scans of tinted raw stocks, courtesy Brian Pritchard (www.brianpritchard.com)

Later in 1929, Kodak sold a pretinted series of Sonochrome film stocks. As Kodak's literature from the time describes them,

> *A spectrum of sixteen delicate atmospheric colors, keyed to the moods of the screen, in the new series of Eastman Sonochrome tinted positive films for sound pictures. For the first time, all the serviceable associations of color tones are brought to the aid of the sound picture in the new Eastman Sonochome Films, a chromatic series of sound positives… Pictures in Sonochrome tints have a variety and a sustained interest that can not be achieved with black and white positive alone.*

These stocks provide a much more sophisticated color vocabulary from which to draw upon for period-appropriate tints, as shown in **Figure 23.14**.

Figure 23.14 Color wheel of all available Kodak Sonochrome tints, courtesy George Eastman House Motion Picture Department Collection. Note that many of the tints, due to deterioration of the dyes used, have faded.

In "Tinted Films for Sound Positives," Loyd A. Jones produces the following list, which I paraphrase, correlating specific Sonochrome tints with mood and setting:

- **Argent:** A hueless color, silvery gray. It may be used to fatigue the eye to the point of monotony, after which the presentation of a hue will have an enhanced effect.
- **Sunshine:** Clear brilliant yellow, complementary to sky blue, designed to match the color of sunlight seen in contrast to the blue sky. This is 83 percent transmissive, meant to give the impression of brilliant sunlit conditions. It suggests a mood of lively interest and attention but not high excitement.
- **Candleflame:** Pastel orange-yellow. More orange and less transmission than Sunshine, useful for bright interiors with artificial illumination and morning or afternoon sunlight. It creates mild moods with feelings of coziness, comfort, intimacy, and well-being.
- **Firelight:** Soft yellow-orange, warmer than Candleflame, with lower transmission, useful for interiors with artificial illumination but subdued by shaded lamps and candles or indirectly lit by open fire. It creates moods of warmth, comfort, intimate home relationships, mild affection.
- **Afterglow:** Soft rich orange. This is the warmest color of the series, appropriate for exterior dawn and sunset and warmly lit interiors. It creates moods of luxury, wealth, security, and relatively strong affections and is also associated with autumnal colors. It is indicative of repose, ambitions attained, accomplishment, and similar aspects of maturity.
- **Peachblow:** Delicate flesh pink. This offers a small but definite blue content and is less warm than Afterglow. It is appropriate for close-ups "where it is desired to do full justice to feminine beauty" and for suggesting the glow of life.
- **Rose Dorée:** Deep, warm pink suggesting sensuousness and passion. This is appropriate for moods that are amorous, romantic, and exotic; for scenes representing an intimate atmosphere (the boudoir); and for feelings of happiness, joy, and excitement.
- **Verdantè:** Pure green, somewhat pastel. It is slightly warm and appropriate for spring foliage, suggesting trees, grass, and vernal landscapes. It offers associations of youth, freshness, unsophistication, innocence. It is close to the neutral point in the warm cool scale.
- **Aquagreen:** Brilliant blue-green, 40 percent transmissive, cool but not cold. This is appropriate for northern waters and the rendition of the sea under clouds and in storm, mature foliage, dense forests, and jungles. It suggests wetness and moods pertaining to maturity, wisdom, dignity, repose, and restfulness.

- **Turquoise:** A clear brilliant blue, cool, 43 percent transmissive. This is appropriate for calm tropical seas under clear skies, and the Mediterranean and South Sea islands, and it invokes moods of restfulness, dignity, and reserve, but not depressive. It is also suitable for moonlit effects.
- **Azure:** Strong sky-blue, colder than Turquoise. It is depressing with transmission of 28 percent. It creates moods that are sedate, austere, forbidding, or slightly gloomy.
- **Nocturne:** Deep violet blue, 28 percent transmissive. It suggests night, shadows, gloom, coldness, associational reactions of depressive conditions, despair, failure, unattained ambitions, intrigue, and the underworld.
- **Purplehaze:** Bluish-violet or lavender, rather pastel. It offers a high transmission of 40 percent, giving greater brilliance than adjacent tints. The hue is approximately the same as the shadows on sunlit snow under a clear blue sky. The moods of this color are highly contextual; for a twilight scene in the desert, it imparts a feeling of distance, mystery, repose, and languorous warmth. In a scene with snow fields, glaciers, or snow-capped mountains, it has a cooling effect.
- **Fleur de lis:** Bright royal purple. It has 25 percent transmissiveness and is relatively cool but not as cool as Nocturne. It is the color of royalty, high office, power, and pomp. It suggests reserve, dignity, and austerity.
- **Amaranth:** Redder purple than Fleur de lis, warmer and less austere. It is appropriate for scenes of opulence and luxury. With proper contextual relation, it may be well adapted to scenes approaching sensuality and abandon, such as bacchanalian revels.
- **Caprice:** Cool pink. It has 53 percent transmission, thus giving a brilliant sparkling screen. It is a jolly, carefree, hilarious color suggestive of carnivals, Mardi Gras fête days, and merry-making in general.
- **Inferno:** Fiery red tinged with magenta. It is directly suggestive of fire, adapted to scenes of burning buildings glowing furnaces, and forest fires, and it creates moods of riot, panic, anarchy, mobs, turmoil, strife, war, battle, and unrestrained passion.

So there you have it, a palette-based visual dictionary of moods and passions. When actually drawing upon all this information to create a vintage 1920s tinted film look, you'll be combining several different techniques described earlier. This is a perfect situation where you can see how to mix and match different treatments to create a completely different effect.

1. When adding a first correction, desaturate the image. Since orthochromatic stocks were often used in early cinema to save money, you can use channel or RGB mixing to create the desired starting point for the image as described in Chapter 18, "Monochrome Looks."

2 Stocks of this era were often quite contrasty, so within this same correction you can use curves or nine-way contrast adjustments to add significantly more shadow density with a bottom and top-heavy S curve. Flattening the highlights a bit so they're not quite so brilliant helps as well, even as you stretch the midtone contrast. Crushing the blacks a bit is probably a good idea, lending the impression of many generations of reproduction and transfer (**Figure 23.15**).

Figure 23.15 The result of channel mixing to simulate orthochromatic desaturation with a luma curve used to add "density" to the shadows while gently diminishing the highlights

3 In a second correction, you can take the optional step of adding a subtle or strong vignette around the edge of the picture using a shape/Power Window, darkening the midtones and highlights outside of the shape to create the classic silent vignette. This effect was used to very deliberately focus the viewer's eye in many films.

4 In a third correction, tint only the highlights and midtones by combining a color field of the appropriate color with the black-and-white image using the Multiply composite or blend mode in order to create a mix of the color with the original with varying degrees of severity. Keep in mind that because of the transmissiveness of the tinted stocks, more vivid colors tended to be darker and richer, while the more "brilliant," or brighter, tints were a bit more subtle.

However, you have an advantage 1920s filmmakers never had, a color-balance control, so you can dial in whatever looks good.

5 For the final touch, add a fourth correction, and lift the Gain or Master Offset controls around 10–20 percent to slightly wash out the blacks—more for more of a faded look and less for a more intense, brilliant look. This is optional, and similarly to the other techniques presented for aged film looks, there's a case to be made for dropping the blacks of overly exposed material; it really depends on what your goals are (**Figure 23.16**).

Figure 23.16 The final tinted film look

If you build this look in Resolve, your node tree should look something like **Figure 23.17**.

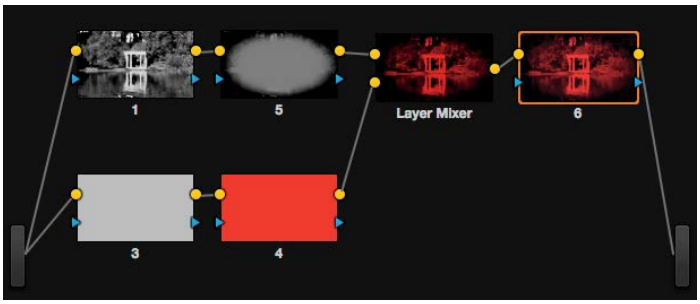

Figure 23.17 The six nodes used to create this effect in DaVinci Resolve. These corrections are simple and can be performed in any color correction application.

Depending on how aged you want the image to appear, now is a good time to add film damage, grain, or any other distressed film look you might like to enhance the effect.

IN CONCLUSION

Since this is the end of the book, here's one last note of wisdom from Loyd A. Jones. It's a sentiment that I believe applies to all creative treatments of color in cinema described throughout this work.

> *It is not desired that the reader shall gain the impression from this rather enthusiastic discussion of the potential emotional value of color that the lavish and unrestrained use of color treatments is advocated. On the contrary it is desired to emphasize the necessity of using the color accompaniment to a motion picture production with care and discretion. The use of too strong or saturated colors is in general not good, since such colors are usually obtrusive and distracting and may defeat rather than promote the attainment of the desired effect. A more subtle method will yield better results… Thus the color having fulfilled its mission, saying definitely that this scene has a specific emotional atmosphere, fades into the background and while continuing to make itself felt in the subconscious mind of the observer by lending a warmth and softness to the scene permits the action to carry forward the dramatic sequence without the unpleasant and distracting influence of pronounced color.*

I couldn't *possibly* say it any better than that.

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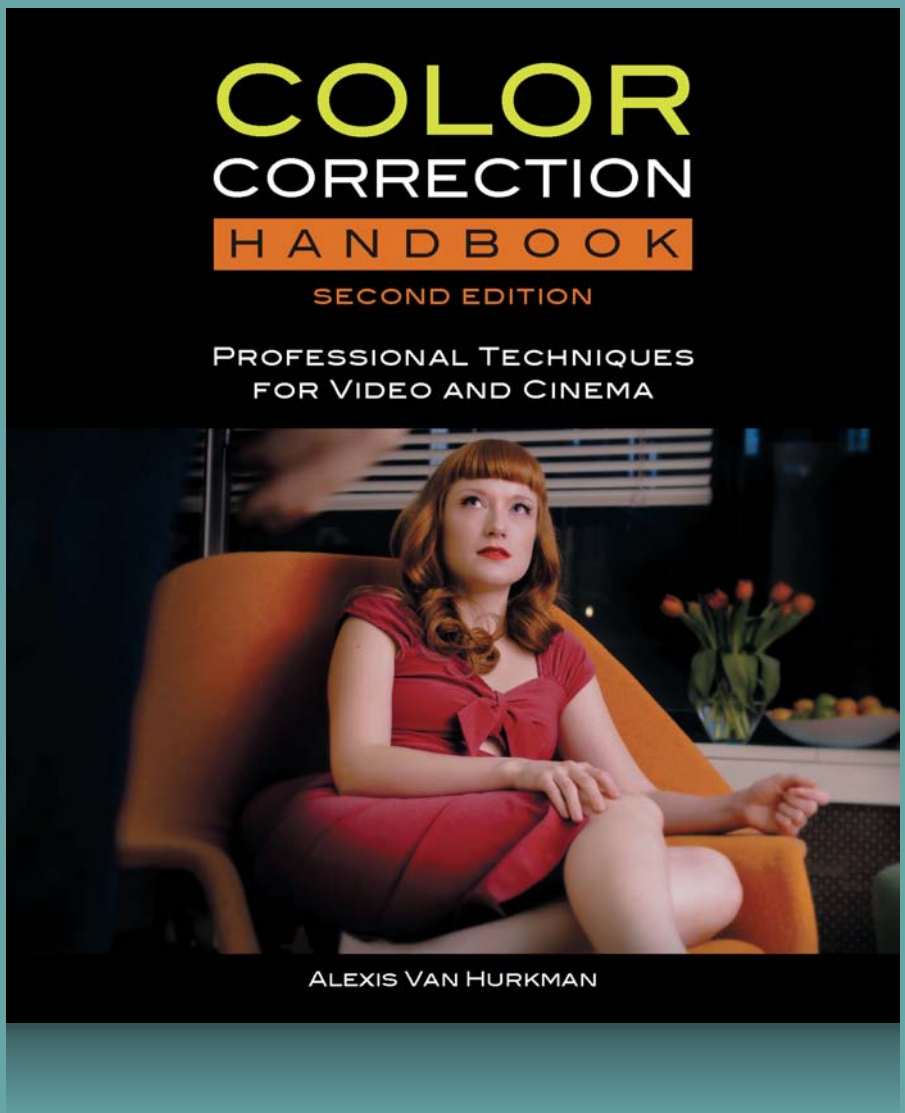

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